Setup and Installation Guide

HP BladeSystem bc1500 Blade PC and PC Blade Enclosure

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This guide provides step-by-step instructions for installation, and reference information for operation, troubleshooting, and future upgrades for the HP Consolidated Client Infrastructure (CCI) solution.

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WARNING: Text set off in this manner indicates that failure to follow directions could result in bodily harm or loss of life.

CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

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1

About This Guide

This guide provides step-by-step instructions for installation, and reference information for operation, troubleshooting, and future upgrades for the HP Consolidated Client Infrastructure (CCI) solution.

The cross-references in this guide are linked to the referenced section. Click on a cross-reference to go directly to that section.

Audience Assumptions

This guide is for the person who installs, administers, and troubleshoots HP CCI solutions. HP assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

Important Safety Information

WARNING: Before installing this product, read the *Important Safety Information* document included with the system.

Symbols on Equipment

The following symbols may be placed on equipment to indicate the presence of potentially hazardous conditions:

WARNING: This symbol, in conjunction with any of the following symbols, indicates the presence of a potential hazard. The potential for injury exists if warnings are not observed. Consult your documentation for specific details.

This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.

WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades, and servicing to qualified personnel.

This symbol indicates the presence of electric shock hazards. The area contains no user or field serviceable parts. Do not open for any reason.

WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure.

This symbol on an RJ-45 receptacle indicates a network interface connection.

WARNING: To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.

These symbols, on power supplies or systems, indicate that the equipment is supplied by multiple sources of power.

WARNING: To reduce the risk of injury from electric shock, remove all power cords to completely disconnect power from the system.

Weight in kg
Weight in lb

This symbol indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

Rack Stability

WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- The leveling jacks are extended to the floor.
- The full weight of the rack rests on the leveling jacks.
- The stabilizing feet are attached to the rack if it is a single-rack installation.
- The racks are coupled together in multiple-rack installations.
- Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.

Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.

WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

IMPORTANT: Text set off in this manner presents essential information to explain a concept or complete a task.

Text set off in this manner presents additional information to emphasize or supplement important points of the main text.

Related Documents

For additional information on the topics covered in this guide, refer to the following documents:

- *HP PC BL Enclosure Integrated Administrator User Guide*
- *ProLiant Integration Module for Altiris User Guide*
- *Servers Troubleshooting Guide*
- *Product Service Card*
- *HP PC BL Enclosure Interconnect Switch User Guide*
- White paper: *HP ProLiant BL e-Class System Overview and Planning*
- *QuickSpecs*

Getting Help

If you have a problem and have exhausted the information in this guide, you can get further information and other help in the following locations.

Technical Support

For technical support, call the HP Technical Support Phone Center for your region. Telephone numbers are listed in the *Support Telephone Numbers* guide included on the *Documentation* CD that ships with Blade PCs. Telephone numbers for Technical Support Centers are also listed on the HP website, www.hp.com.

HP Website

The HP website has information on this product as well as the latest drivers and flash ROM images. You can access the HP website at www.hp.com.

2

HP CCI Solution Technology

Hardware Features

The HP CCI solution is comprised of a rack-mountable HP BladeSystem PC Blade Enclosure that contains advanced electronics for managing up to 20 single-processor blade PCs.

HP BladeSystem PC Blade Enclosure with blade PCs (20)

The enclosure and blade PC features described in the following sections are standard on HP CCI solutions, unless otherwise specified.

HP PC Blade Enclosure Standard Features

The HP PC Blade Enclosure features include:

- 3U height and standard 48 cm (19 inch) width
- Support for up to 20 Blade PCs
- Interconnect Tray supporting an Interconnect Switch (standard configuration) or an RJ-45 Patch Panel (optional).
- Integrated Administrator for local and remote management and monitoring
- Redundant power
- Redundant cooling
- System health LEDs

Interconnect Switch

The HP PC Blade Enclosure C-GbE Interconnect Switch features include:

- Significant cable reduction - 40 Blade PC NIC connections to four RJ-45 Gigabit Ethernet uplink connectors.
- Four sockets supporting optional fiber optic Gigabit Interface Converter (GBIC)/Small Form-factor Pluggable (SFP) modules.
- Interconnect tray form factor that fits into blade enclosure
- Low wattage for maximum power efficiency
- Compatibility with common core switches

RJ-45 Patch Panel (Optional)

The RJ-45 Patch Panel features:

- 40 port 10/100 RJ-45 connectors
- 1 to 1 mapping between each NIC on the blade PCs to one of the 40 RJ-45 ports on the back of this tray-mounted patch panel
- Separate Link and Activity LEDs, for each 10/100 port

Integrated Administrator

Integrated Administrator features include:

- Local and remote access to enclosure and blade PC information
- Secure Shell, Telnet, and Secure Sockets Layer (SSL) Web access
- Virtual power and Unit Identification (UID) buttons
- Access to any blade PC's remote console
- Access to any blade PC's Computer Setup (F10) Utility
- Support for command line scripting

Redundant Power

The HP PC Blade Enclosure includes two 600-W redundant hot-plug power supplies

- 1 + 1 redundancy
- Integrated hot-plug capability
- Autosensing input voltage range from 100 to 127 VAC and 200 to 240 VAC
- Load-sharing across all Blade PCs

Redundant Cooling

The HP PC Blade Enclosure ships with four redundant hot-plug fans. These fans offer:

- 2 + 2 redundancy
- Hot-swapping among all fan positions
- Variable-speed fans
- Individual fan status LEDs

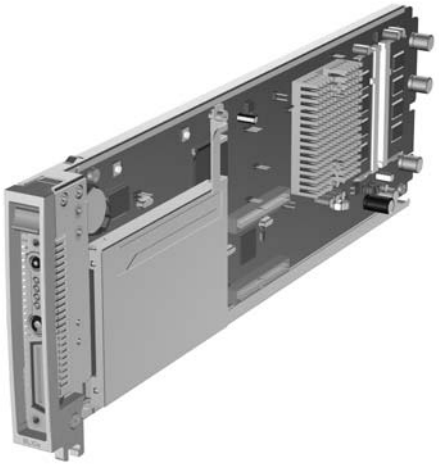
System Health LEDs

System health information is displayed locally through a full set of system LEDs, including:

- Internal fan health LEDs
- External health LEDs
  - Fan health LED
  - Enclosure health LED
  - Blade PC LEDs
  - Power supply LEDs
  - Integrated Administrator health LED

HP BladeSystem bc1500 Blade PC Features

The Blade PC is simple to install, deploy, and service. A Blade PC that requires out-of-the-rack upgrades, service, or maintenance can be easily replaced by another Blade PC. The following figure shows a Blade PC.



Blade PC

A Blade PC supports processor and system architecture technology, including the following:

- Processor
- Memory
- Mass storage
- Blade PC status and monitoring
- Diagnostic adapter (requires optional graphics diagnostic card)
- Video (connector for a graphics diagnostic card; optional graphics diagnostic card part number is 346204-001)
- ROM
- 2 LOM (LAN on mother board)
- Health and power control

Processor

Each Blade PC ships with an integrated AMD Athlon™ 64 1500+ with 512KB cache.

CAUTION: The processor heatsink assembly is integrated into the system board and cannot be removed.

Memory

The Blade PC supports the following memory features:

- DDR 333 (2 SODIMM connectors)

  For more information, refer to *QuickSpecs* located on the HP website: www.hp.com

- 512MB system memory expandable to 2GB with two 1GB SODIMMs Mass Storage

The Blade PC ships with one ATA hard drive attached with screws.

Blade PC Status and Monitoring

A Blade PC provides the following status and monitoring features:

- Blade PC Unit Identification (UID) button/LED
- Blade PC health LED
- Blade PC network activity LEDs
- Hard drive activity LED
- Power button/LED
- Diagnostic support through the Computer Setup (F10) Utility, the Integrated Management Log (IML), and HP Systems Insight Manager

Diagnostic Adapter and Graphics Diagnostic Card

Each Blade PC has a diagnostic connector. Using the diagnostic adapter and the graphics diagnostic card (available together as an after-market option), the following capabilities are available:

- USB connectivity for two USB devices including diskette drive, CD-ROM drive, keyboard, and mouse
- PS/2 connectivity for keyboard and mouse
- Video connectivity through a standard 15-pin VGA connector (optional graphics diagnostic card required for video)
- Serial connectivity for facilitating software maintenance

The diagnostic adapter may be represented under System Devices in Device Manager as "Generic Bus."

Video (optional)

The Blade PC supports video through the diagnostic adapter and the graphics diagnostic card (available together as an after-market option). Video features include:

- Support for SVGA, VGA, and EGA graphics resolution
- Video is obtained by attaching an optional graphics diagnostic card to the Blade PC (the optional graphics diagnostic card supports a resolution of up to 1024 x 768 @ 24 bit color depth)
- 4MB SDRAM video memory

ROM

Blade PC ROM features include:

- 1MB ROM to support system and video
- Flashbin utility used to upgrade the system ROM
- Hardware boot block protection
- Remote ROM flash support
- Bootable USB diskette drive support
- Bootable USB CD-ROM drive (limited support)

NICs

The two embedded NICs on the Blade PC have the following features:

- Embedded 10/100-Mbps Broadcom 5705F Fast Ethernet NICs
- Preboot eXecution Environment (PXE) support (first NIC only)
- Auto-negotiation of 10/100-Mbps link speeds
- Full-duplex Ethernet support
- Teaming for network fault tolerance or load balancing (also known as port bonding or trunking)

Software Deployment and Management Features

HP offers an extensive set of features and optional tools to support effective software deployment and management. See Chapter 5, "Deployment and Management," for more detailed descriptions of the following:

- HP PC Blade Enclosure Integrated Administrator

  The HP PC Blade Enclosure Integrated Administrator is a centralized management and monitoring system for the HP PC BL Enclosure and blade PCs. The Integrated Administrator acts as a combination terminal server and remote power controller, enabling out-of-band, secure, serial console connections to all Blade PCs in the enclosure.

- Computer Setup (F10) Utility

  Computer Setup performs a wide range of configuration activities and provides access to numerous settings, including those for system devices, security, storage, and boot order.

- HP Rapid Deployment Pack

  HP Rapid Deployment Pack features include:

  - A graphical deployment console which provides intuitive drag-and-drop events, such as scripts and images, to deploy the operating systems and applications on any combination of Blade PCs installed in the enclosures
  - Simultaneous deployment of multiple Blade PCs

- ❏ Advanced features that can detect and display Blade PCs based on their physical rack, enclosure, and bay locations
- ❏ The ability to set the deployment console to automatically install pre-defined configurations on newly-installed Blade PCs

For more information about HP Rapid Deployment Pack, refer to your authorized reseller, the Rapid Deployment CD that ships with the enclosure, or visit the HP website: www.hp.com

- HP Systems Insight Manager

  HP Systems Insight Manager provides in-depth fault, inventory, and configuration management of HP server platforms (including hundreds of Blade PCs) from a single console.

- Automatic System Recovery-2 (ASR-2)

  ASR-2 is a diagnostic/recovery feature that automatically restarts the Blade PC in the event of a critical operating system failure.

- Enclosure Self Recovery (ESR)

  ESR, similar to ASR-2, is a self-monitoring reliability feature of the Integrated Administrator. If the Integrated Administrator does not boot or hangs during operation, ESR automatically resets the Integrated Administrator for an attempted self-recovery. The Blade PCs and interconnect tray are not affected by ESR.

- Integrated Management Log (IML)

  The IML provides a detailed log of key system events. This log, which also monitors the health log, is accessible by utilities, including HP Systems Insight Manager.

- Flashbin

  Flashbin enables you to upgrade the firmware (BIOS) with system or option Flashbin utilities.

- Online ROM Flash

  Using the Smart Components for Remote ROM Flash with the Remote Deployment Utility (RDU) console application, Remote ROM Flash enables you to upgrade the firmware (BIOS) from a remote location.

- HP PC Blade Enclosure C-GbE Interconnect Switch

The interconnect switch concentrates the forty 10/100 Ethernet Blade PC network connections into four RJ-45 Gigabit Ethernet uplink connectors. Each uplink can communicate with all 40 network connections; thus, only one to all four of these connectors may be used providing up to a 40-to-1 reduction in the number of network cables connected to the enclosure. The interconnect switch is compatible with industry standards and is fully pre-configured for immediate use.

For more information about these tools and utilities, see Chapter 5, "Deployment and Management."

Diagnostic Features

The hardware, software, and firmware diagnostic tools that are available include:

- HP PC Blade Enclosure Integrated Administrator
- Diagnostic adapter for local Blade PC access (requires optional graphics diagnostic card)
- Optional graphics diagnostic card
- HP Systems Insight Manager
- Power-On Self Test (POST)
- Diagnostics Utility
- Flashbin
- Health monitoring LEDs

3

Planning the Installation

Optimum Environment

For maximum performance and availability from your HP CCI solution, be sure that your operating environment meets the required specifications for the following:

- Floor strength
- Space
- Power
- Electrical grounding
- Temperature
- Airflow

For detailed information on these requirements, refer to the *HP PC Blade Enclosure System Overview and Planning* white paper at the HP website: www.hp.com

Rack Warnings and Cautions

Before installing your rack, observe the following warnings and cautions:

WARNING: To reduce the risk of personal injury or equipment damage, be sure that:

- The rack is adequately stabilized before installing or removing a component.
- Only one component is extended at a time.
- The leveling jacks are extended to the floor.
- The full weight of the rack rests on the leveling jacks.
- The stabilizers are attached to the rack for single-rack installation.

WARNING: To reduce the risk of personal injury or equipment damage, AT LEAST two people are needed to safely unload the rack from the pallet. An empty 42U rack can weigh as much as 115 kg (253 lb), can stand more than 2.1 m (7 ft) tall, and may become unstable when being moved on its casters.

Never stand in front of the rack when it is rolling down the ramp from the pallet; always handle the rack from both sides.

WARNING: When installing the enclosure in a Telco rack, be sure that the rack frame is adequately secured to the top and bottom of the building structure.

CAUTION: When using a Compaq branded 7000 Series rack, you must install the high airflow rack door insert [P/N 327281-B21 (for 42U rack) and P/N 157847-B21 (for 22U rack)] to provide proper front-to-back airflow and cooling and to prevent damage to the equipment.

CAUTION: If an HP or third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- Front and rear doors: If the 42U rack includes closing front and rear doors, you must allow 5,350 sq cm (830 square inches) of holes evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 inches).

CAUTION: The PC Blade Enclosure is shipped without blanking panels. Always use blanking panels (available as an option) to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

HP PC Blade Enclosure Warnings and Cautions

Before installing the HP PC Blade Enclosure, carefully review the following warnings and cautions:

WARNING: To reduce the risk of personal injury or damage to equipment, heed all warnings and cautions throughout the installation instructions.

WARNING: A risk of injury or damage to the equipment from hazardous energy is present. The access door provides access to hazardous energy circuits. The door should remain locked during normal operation or troubleshooting, or the system should be installed in a controlled access location where only qualified personnel have access to the system.

WARNING: To reduce the risk of electrical shock or damage to the equipment:

- Only enter or perform service on specific parts of the HP CCI solution as instructed in the user documentation.
- Do not disable the power cord grounding plugs. The grounding plugs are an important safety feature.
- Plug both power cords into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Unplug the power cords from the power supplies to disconnect power to the enclosure.

WARNING: To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching them.

WARNING: The HP PC Blade Enclosure is very heavy. To reduce the risk of personal injury or damage to the equipment:

- Observe local occupational health and safety requirements and guidelines for manual material handling.
- Remove Blade PCs and power supplies from the enclosures before installing or removing the enclosures.
- Use caution and get help to lift and stabilize an enclosure during installation or removal, especially when the enclosure is not fastened to the rack. If the enclosure is being loaded into the rack above chest level, a third person MUST assist with aligning the enclosure with the rails while the other two people support the weight of the enclosure.

WARNING: The HP PC Blade Enclosure has two power cords for redundant AC power sources. If it is necessary to remove power for servicing, disconnect all power by removing both power supply cords from either the wall or the AC connectors on the rear of the enclosure.

CAUTION: When servicing non-hot-plug components, you must power down the Blade PCs and/or the enclosure and Blade PCs. However, it may be necessary to leave the Blade PCs powered up when performing other operations, such as hot-plug replacement or troubleshooting.

CAUTION: Protect your equipment from power fluctuations and temporary interruptions with a regulating UPS device. This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system in operation during a power failure.

CAUTION: Always be sure that equipment is properly grounded before beginning any installation procedure. Electrostatic discharge resulting from improper grounding can damage electronic components. For more information, see Appendix B, "Electrostatic Discharge."

CAUTION: Do not remove a power supply without a replacement ready to install. A failed power supply must remain in the system for proper airflow to prevent overheating while the system is operating.

Preparing for Software Deployment

To prepare for software deployment, you must first set up HP Rapid Deployment Pack or another deployment method. These deployment methods are discussed in Chapter 5, "Deployment and Management."

HP Rapid Deployment Pack

To deploy your Blade PCs using HP Rapid Deployment Pack, be sure that you have a DHCP server for IP address assignment, a deployment server (can be the same system as the DHCP server), and the Rapid Deployment CD included with your enclosure.

Alternate Deployment Method

If you are not using HP Rapid Deployment Pack, use your preferred deployment infrastructure. Blade PCs have a PXE-enabled NIC (the first NIC only) and support bootable USB CD-ROM and USB diskette drives (attached via the diagnostic adapter).

Shipping Contents

IMPORTANT: All of the rack-mounting hardware necessary for installing the HP PC Blade Enclosure into an HP, Compaq branded, or third-party rack is included with your enclosure. For Telco racks, a separate option kit with Telco rack-mounting hardware is available.

Blade Enclosure

The HP PC Blade Enclosure ships with the following:

- Two redundant hot-plug power supplies and power cords
- C-GbE Interconnect Switch with Integrated Administrator
- Four redundant hot-plug fans
- Documentation CD.
- Rack-mounting hardware for HP, Compaq branded, and third-party racks

CAUTION: Always install either a Blade PC or a Blade PC blank in each Blade PC bay to maintain proper airflow and cooling. Improper airflow can lead to thermal damage.

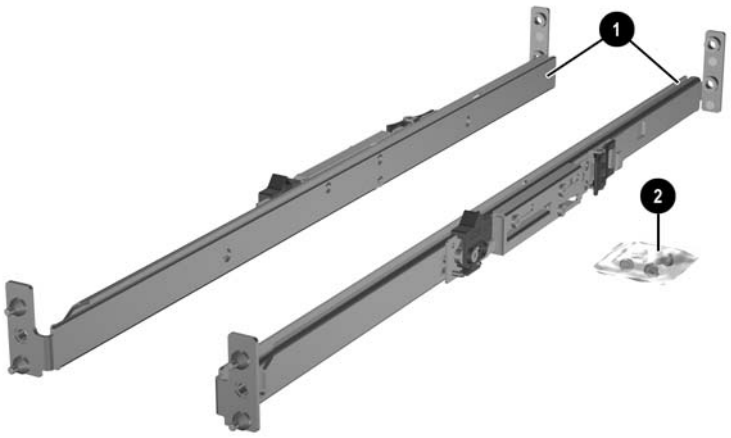
CAUTION: Do not remove a power supply without a replacement ready to install. A failed power supply must remain in the system for proper airflow to prevent overheating while the system is operating.

Rack-Mounting Hardware

The following figure and table show the standard rack-mounting hardware (for HP, Compaq-branded, and third-party racks) that ships with the HP PC Blade Enclosure.

CAUTION: Do not ship the blade PCs and enclosure while inside the rack without first installing the HP PC Blade Enclosure Shipping Bracket (part number PH555A). Failure to use the shipping bracket may cause damage to the blade PC and/or enclosure, thereby voiding the warranty. Refer to the documentation in the option kit for more information.

IMPORTANT: All of the rack-mounting hardware necessary for installing the HP PC Blade Enclosure into an HP, Compaq branded, or third-party rack is included with your enclosure. For Telco racks, a separate option kit with Telco rack-mounting hardware is available.



Standard rack-mounting hardware

Item	Description
❶	Rack rails (2, left and right)
❷	Bag of screws
Not shown	Enclosure rack template

Rack rails have the following features:

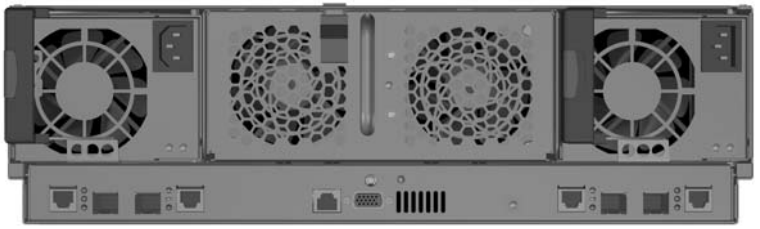
- Adjustable depth of 61 cm to 91 cm (24 inches to 36 inches)
- Depth indicator, visible in the middle of the rail
- "L" and "R" markings to identify left and right rack rails (from the front of the rack)

Blade PCs

Blade PCs ship in packages of one or ten Blade PCs.

Interconnect Switch

The standard configuration of the PC Blade Enclosure includes a C-GbE Interconnect switch installed into the back of the enclosure.



Rear of enclosure with Interconnect switch

Optional RJ-45 Patch Panel

The interconnect switch may be replaced with an optional RJ-45 patch panel as shown below.

Rear of enclosure with optional RJ-45 patch panel installed

Optional Installation Service

You may choose to have HP install your HP CCI solution. This method helps ensure top performance from the start and is especially valuable for business-critical environments. Contact your HP account representative to obtain more detailed information and pricing.

4

Installing and Cabling the HP CCI Solution

This chapter contains the following procedures:

- Measuring with the rack template
- Installing the rack rails
- Installing the enclosure into the rack
- Cabling the HP CCI solution
  - ❏ Identifying interconnect tray connectors
  - ❏ Cabling the enclosure
- Powering up the HP CCI solution
- Powering down the HP CCI solution
  - ❏ Powering down a Blade PC
  - ❏ Powering down the enclosure
- Installing a Blade PC
- Removing a Blade PC
- Installing additional memory
- Attaching the diagnostic adapter and optional graphics diagnostic card

Measuring with the Rack Template

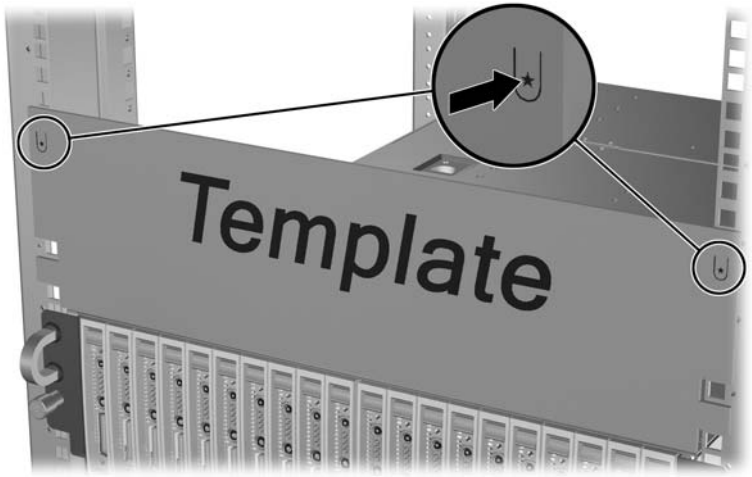
Using the rack template, identify the proper holes for inserting the tabs on the vertical rack supports. Use a pencil to mark the top and bottom edges for the rack supports on the rack template, which identify the position for the rails supporting the enclosure.

To use the rack template to identify the required space and location for the enclosure:

1. Stand at the front of the rack and identify the front side of the rack template.
2. Starting at the top of the last item installed, secure the rack template against the front of the rack by sliding the two push tabs into the holes in the rack supports.

WARNING: Racks must be adequately stabilized before and after product installation. If you are installing an enclosure into an empty rack, you must install the enclosure at the bottom of the rack and work your way up with additional enclosures as needed.

IMPORTANT: Match the hole pattern on the rack template with the holes in the rack supports.

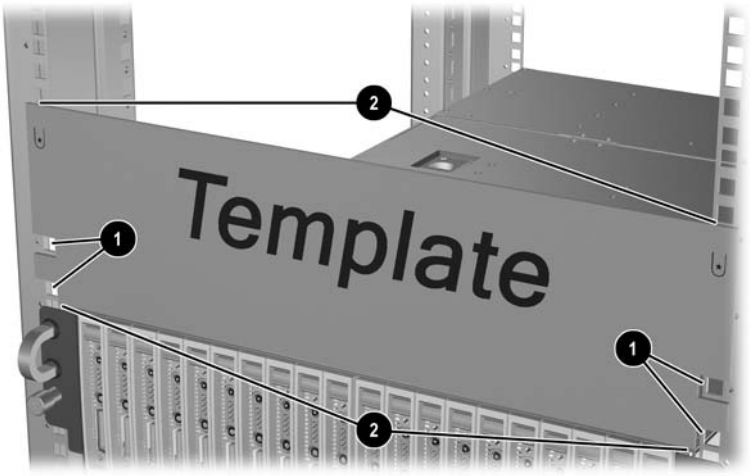


Measuring with the rack template

3. Align the rack template so that its sides are square with the sides of the rack.

IMPORTANT: Tick marks on the rack supports help you to maintain proper alignment of the rack template.

4. Use a pencil to mark an "M" at the locations on the rack where the rack rails are to be inserted ❶.
5. On the rack, mark the top and bottom edges of the rack template to help align the rack template for the next enclosure ❷.



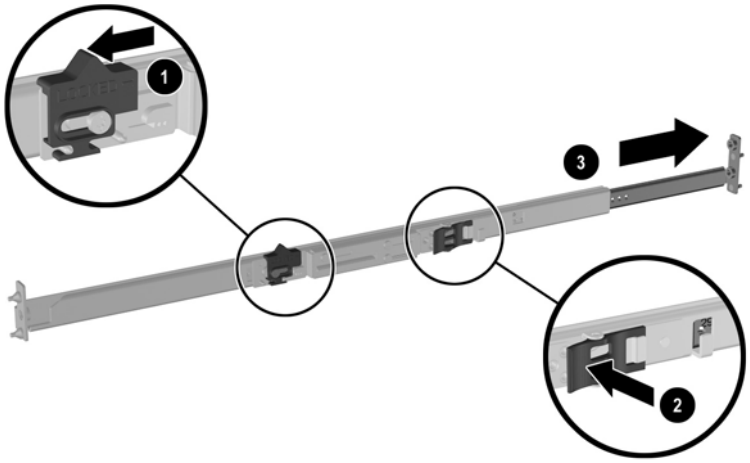
Marking the rack for enclosure installation

6. Remove the rack template from the front of the rack and move to the back of the rack.
7. Identify the back side of the rack template.
8. Repeat steps 2 through 5 for the back of the rack.

Store the rack template for future use.

Installing the Rack Rails

1. Measure the depth of your rack.
2. Be sure that the rail locking gear is in the unlocked position ❶.
3. Press the rail locking tab to unlock the rack rail ❷.
4. Adjust the rack rail to the depth of the rack using the numbers on the rack rail as a guide ❸. The depth of a Compaq branded rack (29 inches) is clearly indicated on the rack rails.

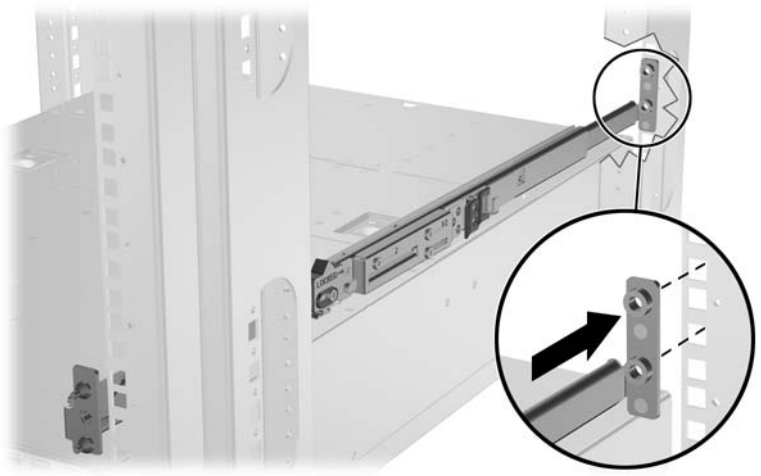


Unlocking and adjusting a rack rail

IMPORTANT: Numbers on the rack rail provide a gross adjustment of the depth of the rack. The rack rail may need to be tightened to ensure proper fit.

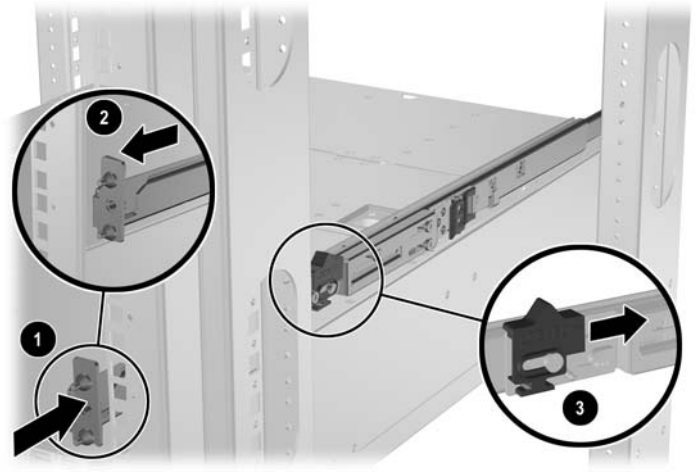
5. Insert the rear of the right rack rail into the rack at the marks you made when measuring with the template.

The rack rails feature “L” and “R” markings to identify the left and right rack rails (from the front of the rack).



Inserting the rear of the rack rail

6. Compress the spring-loaded rack rail toward the rear of the rack ❶.
7. Using the marks you made when measuring with the template, align the front of the right rail with the holes and release the rail, allowing it to lock into position ❷.
8. Engage the locking gear ❸.



Inserting the front of the rack rail and engaging the locking gear

CAUTION: Rack rails must be installed as tightly as possible. Failure to obtain a correct fit may result in damage to equipment.

Once the right rack rail is properly installed, install the left rack rail using the same procedure.

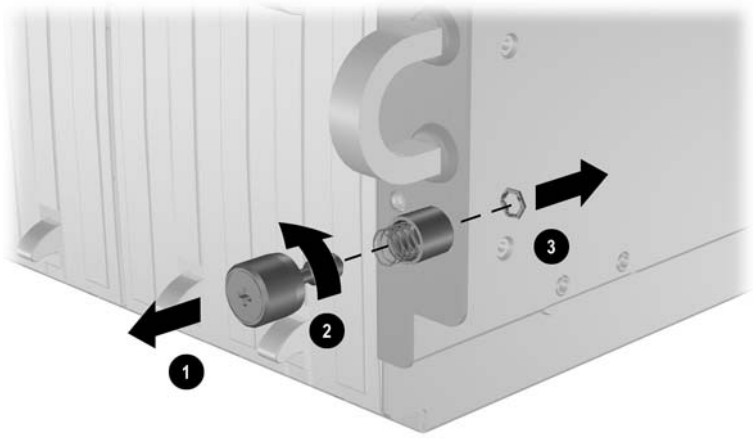
Installing the Enclosure into the Rack

The enclosure ships with two different sizes of thumbscrews:

- Size 10-32 thumbscrews with white hexagonal washers, which are compatible with Compaq-branded racks and some HP and third-party racks
- Size M6 thumbscrews with black hexagonal washers, which are compatible with some third-party racks that require metric sizes

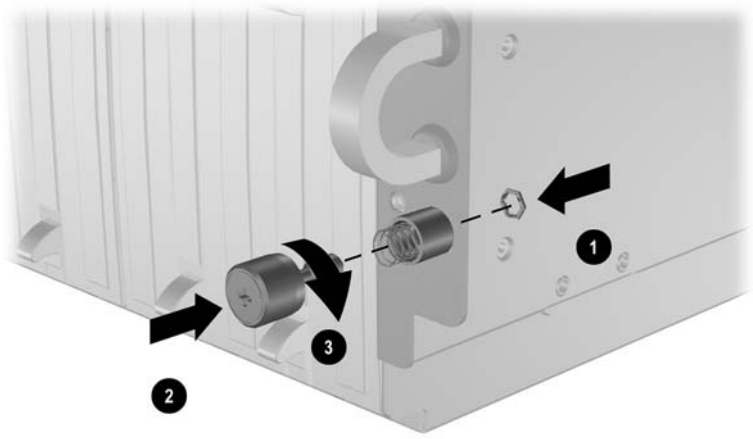
To replace a thumbscrew:

1. Pull the thumbscrew outward ❶.
2. Unscrew the thumbscrew ❷ while holding on to the hexagonal washer.
3. Remove the thumbscrew and hexagonal washer ❸.



Removing a thumbscrew and hexagonal washer

4. Place the hexagonal washer at the back of the hole in the enclosure ❶.
5. Insert the screw through the hole in the enclosure.
6. Press the head of the screw inward so that the spring is completely compressed ❷.
7. Screw the hexagonal washer onto the shaft of the screw until it passes all the threads and is secure within the thumbscrew housing ❸.



Replacing a thumbscrew, spring, and hexagonal washer

8. Repeat steps 1 through 7 for the other thumbscrew.

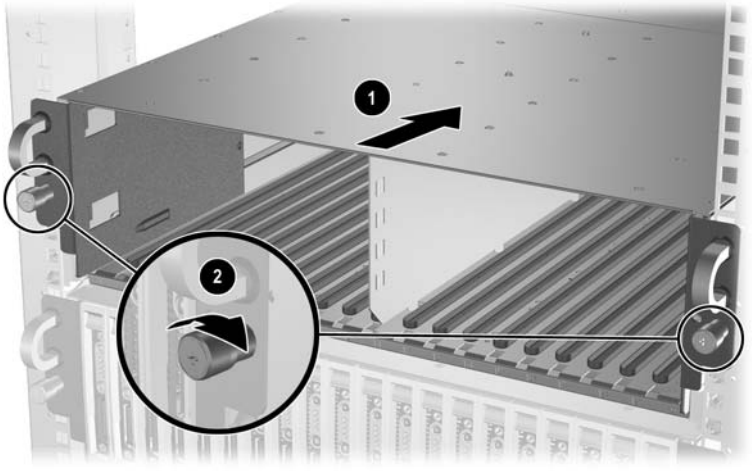
WARNING: Remove the two hot-plug power supplies before installing the enclosure into the rack to reduce weight.

WARNING: At least two people must lift the enclosure into the rack together. If the enclosure is loaded into the rack above chest level, a third person must assist with aligning the enclosure with the rails while the other two people support the weight of the enclosure.

CAUTION: Do not remove the enclosure from the rack by the thumbscrews. Use the handles located above the thumbscrews.

To load the enclosure into the rack:

1. Refer to the "Measuring with the Rack Template" section in this chapter.
2. Stand at the front of the rack.
3. Align the bottom of the enclosure with the top of the rack rails.
4. Slide the enclosure fully into the rack ❶.
5. Tighten the thumbscrews to secure the enclosure in the rack ❷.



Installing the enclosure into the rack

Cabling the HP CCI Solution

An HP CCI solution requires no internal cabling. External cabling is achieved through the interconnect switch installed in your solution.

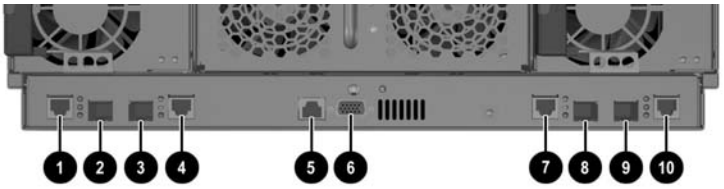
The procedure for cabling an enclosure consists of the following steps:

- Identifying the interconnect switch connectors
- Cabling the blade enclosure

HP PC Blade Enclosure C-GbE Interconnect Switch Connectors

The interconnect switch reduces forty 10/100 Ethernet networking connections coming from the Blade PCs to four Gigabit Ethernet uplink RJ-45 connectors.

An Integrated Administrator module is included with the interconnect switch.

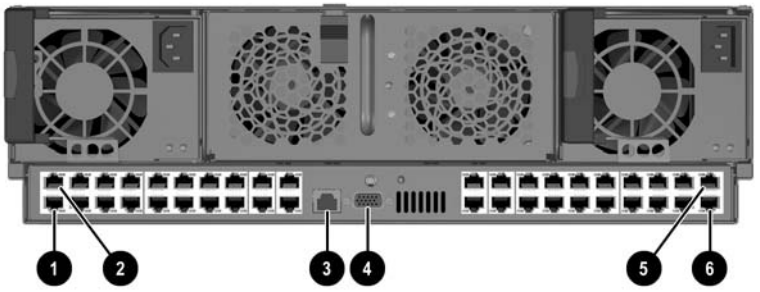


Interconnect switch connectors

Item	Description	Location
❶	Gigabit Ethernet jack for port 43	Interconnect switch
❷	Socket for optional GBIC SFP module for port 43	Interconnect switch
❸	Socket for optional GBIC SFP module for port 44	Interconnect switch
❹	Gigabit Ethernet jack for port 44	Interconnect switch
❺	10/100 Ethernet jack for Integrated Administrator management port 42	Integrated Administrator module
❻	Integrated Administrator console connector (serial)	Integrated Administrator module
❼	Gigabit Ethernet jack for port 45	Interconnect switch
❽	Socket for optional GBIC SFP module for port 45	Interconnect switch
❾	Socket for optional GBIC SFP module for port 46	Interconnect switch
❿	Gigabit Ethernet jack for port 46	Interconnect switch

Optional RJ-45 Patch Panel

The RJ-45 patch panel functions as a fault tolerant Ethernet pass-through for a 1 to 1 mapping between each NIC on each Blade PC to one of the 40 RJ-45 ports on the back of this tray-mounted patch panel.



Rear of enclosure with RJ-45 patch panel installed

Item	Description	Location
❶	RJ-45 connector for Blade PC bay 20 NIC A	RJ-45 patch panel
❷	RJ-45 connector for Blade PC bay 20 NIC B	RJ-45 patch panel
❸	Integrated Administrator management connector (10/100 Ethernet)*	Integrated Administrator module
❹	Integrated Administrator console connector (serial)*	Integrated Administrator module
❺	RJ-45 connector for Blade PC bay 1 NIC B	RJ-45 patch panel
❻	RJ-45 connector for Blade PC bay 1 NIC A	RJ-45 patch panel

✎ *These items denote connectors for the Integrated Administrator module.

Cabling the Enclosure

CAUTION: Do not connect external devices to the enclosure link (RJ-45) connectors unless the device is listed as a supported device on the Quickspecs. Connecting an unsupported external device to the enclosure link (RJ-45) connectors may damage your external device.

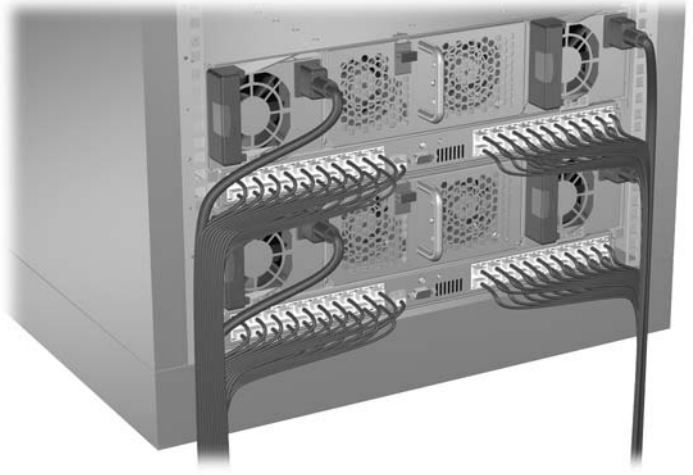
To cable a HP PC Blade Enclosure already installed in a rack:

1. For accessing and configuring the Integrated Administrator locally, connect a client device (running VT-100 terminal emulation software) to the Integrated Administrator console connector using a null-modem cable. For accessing and configuring the Integrated Administrator over your network, connect the Integrated Administrator to your management network via the management connector.
2. Connect the Blade PC network connectors to your network
   - ❏ For the interconnect switch, be sure that at least one of the uplink connectors is cabled. Any Blade PC NIC can be routed to any of the uplink connectors. However, because only NIC A is PXE-enabled by default on each Blade PC, it is recommended that either port 45 or 46 be used for PXE functions.
   - ❏ For the RJ-45 patch panel, be sure that cables are connected for each Blade PC you intend to install in the enclosure. Only the NIC 1 (bottom) RJ-45 connector for each Blade PC provides PXE-enabled connectivity by default.
3. Connect the AC power cord (provided) to each hot-plug power supply.

CAUTION: The enclosure will power up as soon as an AC power cord is connected to a power source and a power supply.

4. Bundle network and power cables together and route them to the outer edge of the rack.

Cabling the solution with the interconnect switch



Cabling the solution with the RJ-45 patch panel

IMPORTANT: Be sure to route the cables for your enclosure in a manner that provides rapid, easy access to the console connector for a local client device, such as a laptop computer. Also be sure to route the cables so they do not block or restrict airflow from any of the fan openings.

5. Repeat steps 1 through 4 for each Blade PC enclosure you have installed.

Null-Modem Cable

If you are cabling a serial device such as a laptop computer to the console connector on the Integrated Administrator, be sure to use a null-modem cable and not a straight-through cable. The following table defines the wiring of a null-modem cable.

Cable Pinout for a Null-Modem Cable

Signal Name	EM PIN	DB-9 PIN	DB-25 PIN
TxD	3	2	3
RxD	2	3	2
RTS	7	8	5
CTS	8	7	4
GND	5	5	7
DSR	6	4	20
CD	1	4	20
DTR	4	1 & 6	6 & 8
TxD	3	2	3

Installing a Blade PC

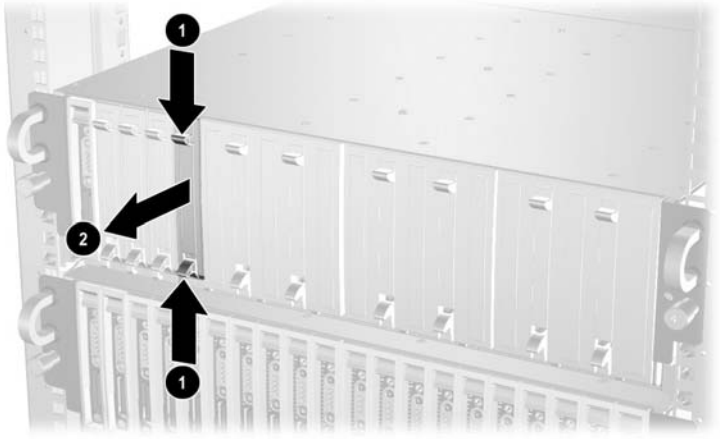
CAUTION: Electrostatic discharge can damage electronic components. Properly ground yourself before beginning any installation procedure. See Appendix B, "Electrostatic Discharge," for more information.

To install a Blade PC:

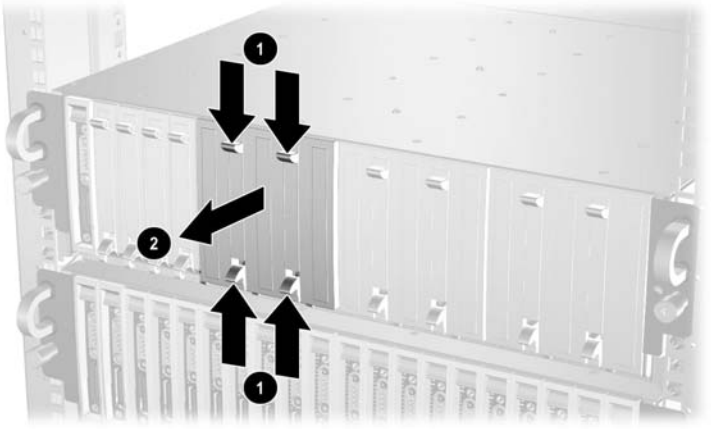
1. Determine your hardware configuration and deployment process. See Chapter 5, "Deployment and Management."
2. Install or upgrade memory before installing Blade PCs into an enclosure. See the "Installing Additional Memory" section in this chapter.

CAUTION: The HP PC Blade Enclosure is shipped without Blade PC blanks. Always populate the Blade PC bays with either a Blade PC or a Blade PC blank (available as an option). Proper airflow can only be maintained when the bays are populated. Unpopulated bays can lead to improper cooling and thermal damage.

3. If Blade PC blanks have been installed, remove the Blade PC blank:
   a. Press the ejector tabs on the Blade PC blank ❶.
   b. Slide the Blade PC blank out of the bay ❷.



Removing a single-bay Blade PC blank



Removing a five-bay Blade PC blank

Store the Blade PC blank for future use.

IMPORTANT: Before installing Blade PCs for the first time, define your hardware configuration and deployment process. See Chapter 5, "Deployment and Management."

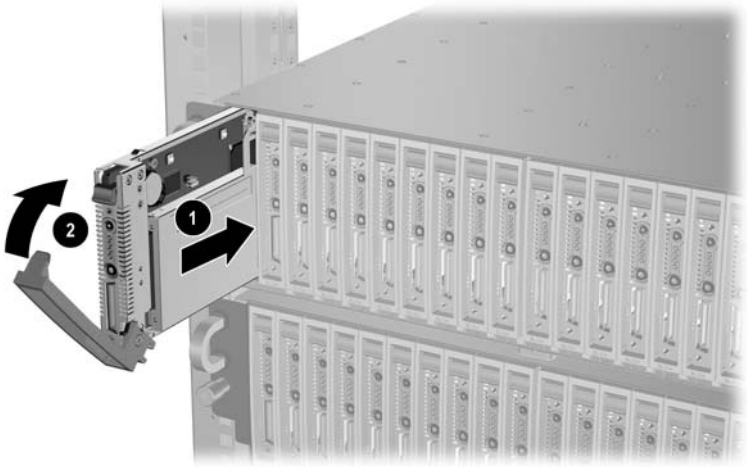
4. Install the Blade PC:
   a. Align the Blade PC with the Blade PC bay on the enclosure and slide the blade partially into the enclosure.
   b. Press the release latch ❶ on the blade.
   c. Pull down the ejector lever ❷.

Opening the blade eject lever

CAUTION: The Blade PC is keyed to fit only one way in the bay. If the Blade PC does not slide easily into the bay, be sure that the Blade PC is oriented properly.

d. Slide the Blade PC inward until the ejector lever engages the enclosure ❶.

e. Close the ejector lever until you hear an audible click that indicates the Blade PC is properly seated ❷.



Installing a Blade PC

IMPORTANT: Install a Blade PC for each of the blanks you have removed.

5. Repeat steps 2 to 4 for each Blade PC you wish to install.

Powering Up the HP CCI Solution

As soon as you connect an AC power cord to a hot-plug power supply on the rear panel, the enclosure powers up. All Blade PCs already installed in the enclosure also power up one at a time in approximately one-second intervals. Plug in the second power supply for redundancy.

A Blade PC installed into a powered enclosure will immediately power up.

Powering Down the HP CCI Solution

You can power down one or more Blade PCs or the entire enclosure.

Powering Down a Blade PC

To power down a Blade PC:

1. Be sure that the Blade PC is not active.

   For specific information about Blade PC LEDs, see Appendix E, "LEDs and Switches."

2. If the Blade PC is active, notify users and stop applications as necessary.
3. Shut down the operating system. This may shut off the Blade PC power.

4. If the Blade PC still has power, power down the Blade PC by either:
   - ❏ Using the Integrated Administrator

     or

   - ❏ Pressing the power button on the front of the Blade PC

IMPORTANT: Refer to the *HP PC Blade Enclosure Integrated Administrator User Guide* to power down the Blade PC using the Integrated Administrator.

Powering down the Blade PC

To perform an **emergency** shut down of a Blade PC, press and hold the blade power button for four seconds.

CAUTION: Performing an emergency shutdown on a Blade PC may result in the loss of any unsaved data.

Powering Down the Enclosure

To perform a graceful shutdown of the enclosure and all the Blade PCs, press the enclosure power button. If your operating system is Microsoft Windows XP, the enclosure automatically performs a graceful shutdown of all Blade PCs, and then removes power from the enclosure.

To perform an **emergency** shut down of the enclosure and all Blade PCs at the same time, press and hold the enclosure power button for four seconds.

CAUTION: Performing an emergency shutdown on the enclosure may result in the loss of any unsaved data on all Blade PCs.

Removing a Blade PC

To remove a Blade PC:

1. Press the release latch ❶.
2. Pull down the ejector lever ❷.
3. Remove the Blade PC from the enclosure ❸.

Removing a Blade PC

Installing Additional Memory

The Blade PCs support the following memory features:

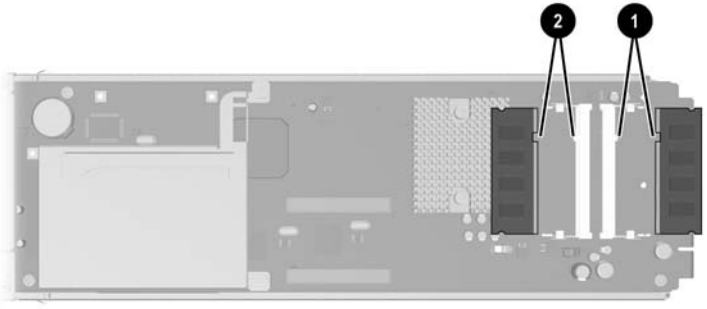
- Unregistered SODIMM DDR 333 memory

  For more information, refer to *QuickSpecs* located on the HP website: www.hp.com
- 512MB system memory expandable to 2GB
- Two SODIMM slots

To install SODIMMs on a Blade PC:

1. Power down the Blade PC. See the "Powering Down a Blade PC" section in this chapter.
2. Remove the Blade PC from the enclosure. See the "Removing a Blade PC" section in this chapter.
3. Place the Blade PC on a level, nonconductive surface.
4. Locate the SODIMM socket keys on the Blade PC:
   - ❏ SODIMM socket 1 keys ❶
   - ❏ SODIMM socket 2 keys ❷

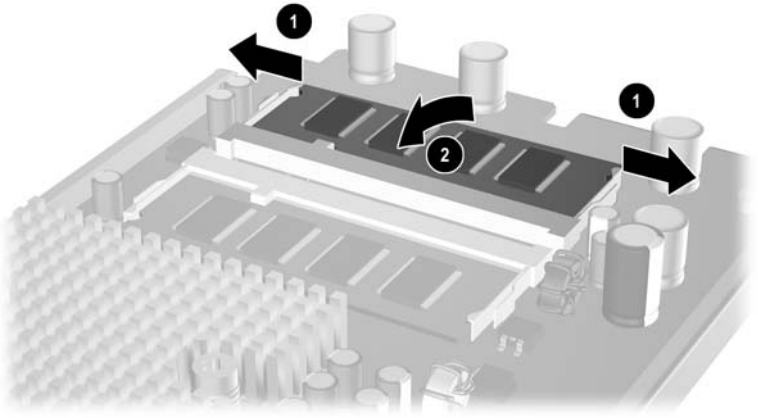
IMPORTANT: SODIMMs are installed inverted from one another. If the labels on SODIMM 1 are face-up, the labels on SODIMM 2 are probably face-down.



SODIMM socket keys

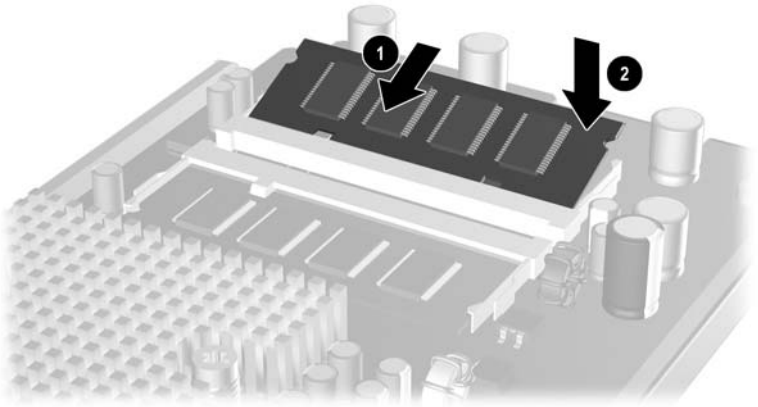
IMPORTANT: Step 5 applies only when you wish to upgrade SODIMMs.

5. Remove the existing SODIMM:
   a. Release the latches on each side of the SODIMM slot 1 ❶.
   b. Remove the SODIMM from the Blade PC ❷.



Removing an SODIMM

6. Install SODIMM 1:
   a. Match the notch on the SODIMM with the tab on the SODIMM socket and insert the SODIMM into the socket at a slight angle ❶.
   b. Press the SODIMM down towards the board, ensuring that it is fully seated and the latches snap into place ❷.



Installing an SODIMM

7. Repeat step 6 to install a second SODIMM into SODIMM slot 2.

Attaching the Graphics Diagnostic Card and Diagnostic Adapter

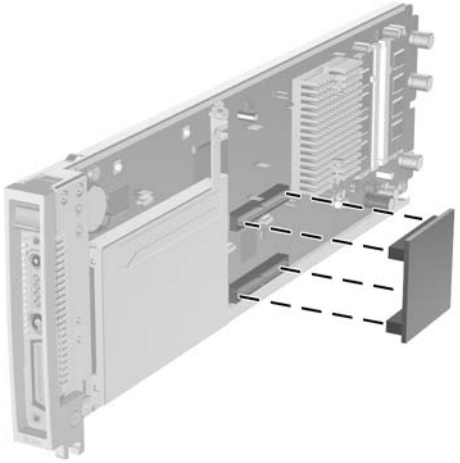
Install the optional graphics diagnostic card on the Blade PC system board to enable video.

Attach the diagnostic adapter to the diagnostic connector on the front of the Blade PC in order to attach peripherals such as a keyboard, video, mouse, USB diskette drive, or USB CD-ROM drive.

Either a USB 2.0 or a USB 1.1 diagnostic adapter can operate with the Blade PC, but the USB 1.1 diagnostic adapter does not support USB 2.0 devices. The USB 2.0 diagnostic adapter shows up under System Devices in Device Manager as "Generic Bus."

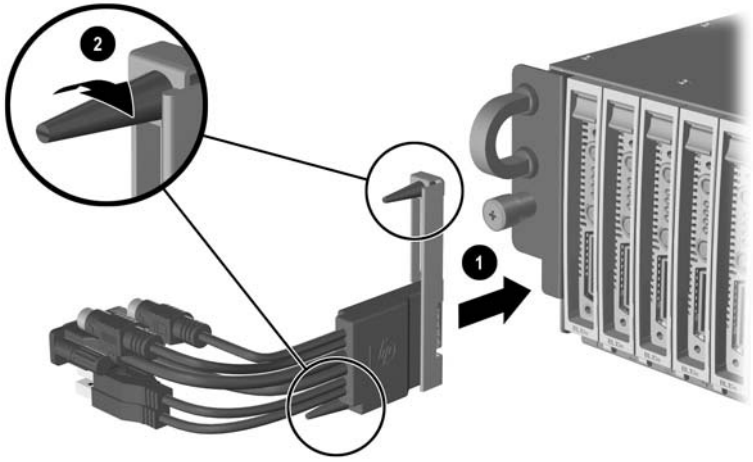
To install the graphics diagnostic card and diagnostic adapter:

1. Power down the Blade PC. See the "Powering Down a Blade PC" section in this chapter.
2. Remove the Blade PC. See the "Removing a Blade PC" section in this chapter.
3. Lay the Blade PC down on a flat surface and install the optional graphics diagnostic card into the sockets.

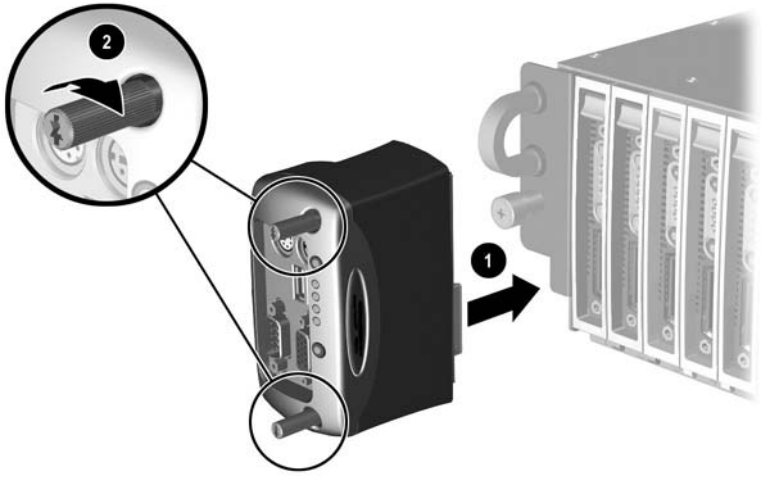


Installing the optional graphics diagnostic card

4. Install the blade in the enclosure. See the "Installing a Blade PC" section in this chapter.
5. Insert the diagnostic adapter into the diagnostic connector on the Blade PC ❶.
6. Tighten the thumbscrews securing the diagnostic adapter in place ❷.

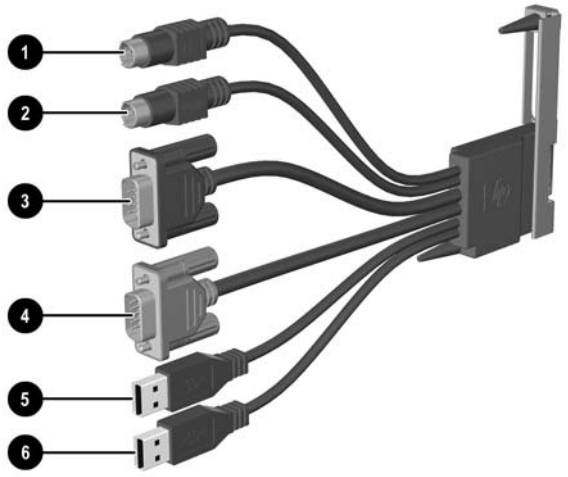


Attaching the USB 2.0 diagnostic adapter



Attaching the USB 1.1 diagnostic adapter

Use the following figure and table to identify connectors on the USB 2.0 diagnostic adapter.



Connectors on the USB 2.0 diagnostic adapter

Item	Description
❶	PS/2 Mouse connector
❷	PS/2 Keyboard connector
❸	Serial connector
❹	Video connector
❺	USB 2.0 #1
❻	USB 2.0 #2

Use the following figure and table to identify connectors on the USB 1.1 diagnostic adapter.

Connectors on the USB 1.1 diagnostic adapter

Item	Description
❶	PS/2 Mouse connector
❷	USB 1.1 #2
❸	Serial connector
❹	PS/2 Keyboard connector
❺	USB 1.1 #1
❻	Video connector

5

Deployment and Management

This chapter provides the following information:

- An overview of available methods for deploying software on Blade PCs
  - Automated deployment using HP Rapid Deployment Pack
  - Alternate deployment methods
  - Diagnostic adapter and optional graphics diagnostic card
- A description of the configuration software and utilities supported by the HP CCI solution
  - Supported operating systems
  - Computer Setup (F10) Utility
  - Flashbin Utility
  - Remote ROM Flash
  - HP PC Blade Enclosure Integrated Administrator
  - HP Systems Insight Manager
  - HP PC Blade Enclosure C-GbE Interconnect Switch management tools and utilities

Blade PC Deployment Options

The Blade PCs are designed for rapid deployment and are ideally suited for headless (unattended), network-based software installation and configuration. HP Rapid Deployment Pack is the optimum choice for Blade PCs and facilitates the configuration of a few or hundreds of blades from an easy-to-use, remote-based graphical deployment console. The PXE-enabled NIC (only the first NIC) and support for bootable USB diskette and USB CD-ROM drives on the Blade PC also facilitate the use of other deployment methods.

Automated Deployment Using HP Rapid Deployment Pack

HP Rapid Deployment Pack (RDP) integrates two powerful products: Altiris Deployment Solution and the ProLiant Integration Module. The RDP console's graphical interface provides intuitive drag-and-drop events, such as scripts and images, for deploying operating systems and applications to multiple Blade PCs simultaneously. HP Rapid Deployment Pack also has advanced features that can detect and display Blade PCs based on their physical rack, enclosure, and bay locations. You can set the deployment console to automatically install pre-defined configurations on newly installed Blade PCs.

For more information about HP Rapid Deployment Pack, refer to your authorized reseller, the Rapid Deployment CD that ships with your enclosure, or visit the following website: www.hp.com/servers/rdp

Alternate Deployment Methods

Blade PCs have a PXE-enabled NIC (the first NIC only) and support bootable USB diskette and CD-ROM drives, as well as a keyboard, video, and a mouse attached via the diagnostic adapter. These features enable you to use your own network-based or local, attended deployment methods for booting and installing software onto Blade PCs.

Diagnostic Adapter and Optional Graphics Diagnostic Card

The diagnostic adapter and the optional graphics diagnostic card enable local health monitoring and management by enabling you to attach peripheral devices directly to a Blade PC. Using the diagnostic adapter and optional graphics diagnostic card, you can:

- View Blade PC event messages (See the "Blade PC Event Messages" section in this chapter.)
- Flash the Blade PC ROM (See the "Flashing the Blade PC ROM" section in this chapter.)
- View software information during deployment

For instructions on how to attach the diagnostic adapter and optional graphics diagnostic card, see Chapter 4, "Installing and Cabling the HP CCI Solution."

IMPORTANT: You can hot-plug peripheral devices using the diagnostic adapter if the devices support hot-plug capability.

Blade PC Features and Supported Software

Configuring your Blade PC includes installing an operating system, applications, and optimized drivers.

HP Rapid Deployment Pack enables you to auto-detect and configure your hardware and to install optimized drivers.

Supported Operating Systems

Blade PCs support Microsoft Windows XP Professional SP1a or later.

Computer Setup (F10) Utility

The Computer Setup (F10) Utility performs configuration activities and enables you to view Blade PC configuration information. The Blade PC comes pre-configured and does not require interaction with Computer Setup, unless you would like to change the default settings. The following table contains the Computer Setup menu options.

To access the Computer Setup (F10) Utility, install the optional graphics diagnostic card and the diagnostic adapter along with a keyboard and monitor on the blade you want to access and press the **F10** key during boot.

For remote console users, you can access the Computer Setup (F10) Utility through the Integrated Administrator. Reboot the blade through the Integrated Administrator and press the **Esc** key then press the **0** (zero) key. Refer to the *HP PC Blade Enclosure Integrated Administrator User Guide* for details.

The function keys in remote console are accessed by pressing **Esc** then the numbers **1** through **0** for **F1** through **F10**. **F11** is accessed by pressing **Esc** then **!** and **F12** is accessed by pressing **Esc** then **@**.

Blade PC configuration information can also be managed remotely using System Software Manager (SSM). For more information, refer to the following website: www.hp.com/go/ssm

Computer Setup (F10) Utility		
Heading	**Option**	**Description**
File	System Information	Lists: • Product Name • Processor Type • Processor Stepping • Cache Size (L1/L2) (dual core processors have this listed twice) • HyperTransport™ Speed • Memory Size • Integrated MAC (address for embedded, enabled NIC A) • Integrated MAC 2 (address for embedded, enabled NIC B) • System BIOS (includes family name and version) • Blade Serial Number • Asset Tracking Number • Rack Name • Enclosure Name • Enclosure Model • Enclosure Serial Number
	About	Displays copyright notice.
	Set Time and Date	Allows you to set system time and date.

✎ Support for specific Computer Setup options may vary depending on the hardware configuration.

Computer Setup (F10) Utility *(Continued)*

Heading	Option	Description
File *(continued)*	Replicated Setup	**Save to Removable Media** Saves system configuration, including CMOS, to a formatted 1.44-MB diskette, a USB flash media device, or a diskette-like device (a storage device set to emulate a diskette drive). **Restore from Removable Media** Restores system configuration from a diskette, a USB flash media device, or a diskette-like device.
	Apply Defaults and Exit	Applies the currently selected default settings and clears any established passwords.
	Ignore Changes and Exit	Exits Computer Setup without applying or saving any changes.
	Save Changes and Exit	Saves changes to system configuration or default settings and exits Computer Setup.
Storage	Device Configuration	Lists all installed BIOS-controlled storage devices. When a device is selected, detailed information and options are displayed. The following options may be presented. **Diskette Type** Identifies the highest capacity media type accepted by the diskette drive. Legacy Diskette Drives Options are 3.5" 1.44 MB and 5.25" 1.2 MB.

✎ Support for specific Computer Setup options may vary depending on the hardware configuration.

Computer Setup (F10) Utility *(Continued)*

Heading	Option	Description
Storage *(continued)*	Device Configuration *(continued)*	**Drive Emulation** Allows you to select a drive emulation type for a certain storage device. (For example, a Zip drive can be made bootable by selecting diskette emulation.)

Drive Type	Emulation Options
ATAPI Zip drive	None (treated as Other). Diskette (treated as diskette drive).
ATA Hard Disk	None (treated as Other) Disk (treated as hard drive)
Legacy Diskette	No emulation options available.
CD-ROM	No emulation options available.
ATAPI LS-120	None (treated as Other). Diskette (treated as diskette drive).

Multisector Transfers *(ATA disks only)*

Specifies how many sectors are transferred per multi-sector PIO operation. Options (subject to device capabilities) are Disabled, 8, and 16.

Transfer Mode *(IDE devices only)*

Specifies the active data transfer mode. Options (subject to device capabilities) are PIO 0, Max PIO, Enhanced DMA, Ultra DMA 0, and Max UDMA.

✎ Support for specific Computer Setup options may vary depending on the hardware configuration.

Computer Setup (F10) Utility *(Continued)*

Heading	Option	Description
Storage *(continued)*	Device Configuration *(continued)*	**Translation Mode** *(ATA disks only)* Lets you select the translation mode to be used for the device. This enables the BIOS to access disks partitioned and formatted on other systems and may be necessary for users of older versions of UNIX (e.g., SCO UNIX version 3.2). Options are Automatic, Bit-Shift, LBA Assisted, User, and None. ⚠ **CAUTION:** Ordinarily, the translation mode selected automatically by the BIOS should not be changed. If the selected translation mode is not compatible with the translation mode that was active when the disk was partitioned and formatted, the data on the disk will be inaccessible. **Default Values IDE** Allows you to specify the default values for the Multisector Transfers, Transfer Mode, and Translation Mode for ATA devices. **Translation Parameters** *(ATA disks only)* ✎ This feature appears only when User translation mode is selected. Allows you to specify the parameters (logical cylinders, heads, and sectors per track) used by the BIOS to translate disk I/O requests (from the operating system or an application) into terms the hard drive can accept. Logical cylinders may not exceed 1024. The number of heads may not exceed 256. The number of sectors per track may not exceed 63. These fields are only visible and changeable when the drive translation mode is set to User.

✎ Support for specific Computer Setup options may vary depending on the hardware configuration.

Computer Setup (F10) Utility *(Continued)*

Heading	Option	Description
Storage *(continued)*	Storage Options	**Removable Media Boot** Enables/disables ability to boot the system from removable media.
		Removable Media Write Enables/disables ability to write data to removable media. ✎ After saving changes to Removable Media Write, the computer will restart. Turn the computer off, then on, manually.
		BIOS IDE DMA Transfers (enable/disable) Allows you to control how BIOS disk I/O requests are serviced. When "Enable" is selected, the BIOS will service ATA disk read and write requests with DMA data transfers. When "Disable" is selected, the BIOS will service ATA disk read and write requests with PIO data transfers.
	DPS Self-Test	Allows you to execute self-tests on ATA hard drives capable of performing the Drive Protection System (DPS) self-tests. ✎ This selection will only appear when at least one drive capable of performing the DPS self-tests is attached to the system.

✎ Support for specific Computer Setup options may vary depending on the hardware configuration.

Computer Setup (F10) Utility *(Continued)*

Heading	Option	Description
Storage *(continued)*	Boot Order	Allows you to: • Specify the order in which attached devices (such as a USB flash media device, diskette drive, hard drive, optical drive, or network interface card) are checked for a bootable operating system image. Each device on the list may be individually excluded from or included for consideration as a bootable operating system source. • Specify the order of attached hard drives. The first hard drive in the order will have priority in the boot sequence and will be recognized as drive C (if any devices are attached). ✎ MS-DOS drive lettering assignments may not apply after a non-MS-DOS operating system has started. **Shortcut to Temporarily Override Boot Order** To boot one time from a device other than the default device specified in Boot Order, restart the computer and press F9 when the monitor light turns green. After POST is completed, a list of bootable devices is displayed. Use the arrow keys to select the preferred bootable device and press Enter. The computer then boots from the selected non-default device for this one time.

✎ Support for specific Computer Setup options may vary depending on the hardware configuration.

Computer Setup (F10) Utility *(Continued)*

Heading	Option	Description
Security	Setup Password	Allows you to set and enable setup (administrator) password. ✎ If the setup password is set, it is required to change Computer Setup options, flash the ROM, and make changes to certain plug and play settings under Windows.
	Device Security	Device Available/Device Hidden • All USB ports
	Network Service Boot	Enables/disables the computer's ability to boot from an operating system installed on a network server.
	System IDs	Allows you to enter: • Asset Tag (18-byte identifier) and ownership Tag (80-byte identifier displayed during POST). • Ownership Tag • Operating System • System Name • UUID • Keyboard locale setting (for example, U.S. or Deutsche) for System ID entry.

✎ Support for specific Computer Setup options may vary depending on the hardware configuration.

Computer Setup (F10) Utility *(Continued)*

Heading	Option	Description
Advanced* *For advanced users only.	Power-On Options	Allows you to set: • **F9** Prompt (enable/disable). Enabling this feature will display the text "F9 = Boot Menu" during POST. Disabling this feature prevents the text from being displayed. However, pressing **F9** will still access the Shortcut Boot [Order] Menu screen. See Storage > Boot Order for more information. • **F10** Prompt (enable/disable). Enabling this feature will display the text "F10 = Setup" during POST. Disabling this feature prevents the text from being displayed. However, pressing **F10** will still access the Setup screen. • **F12** Prompt (enable/disable). Enabling this feature will display the text "F12 = Network Service Boot" during POST. Disabling this feature prevents the text from being displayed. However, pressing **F12** will still force the system to attempt booting from the network.

✎ Support for specific Computer Setup options may vary depending on the hardware configuration.

Computer Setup (F10) Utility *(Continued)*

Heading	Option	Description
Advanced* *(continued)* *For advanced users only.	Power-On Options *(continued)*	Allows you to set: *(continued)* • Option ROM Prompt (enable/disable) Enabling this feature will cause the system to display a message before loading option ROMs. (This feature is supported on some models only.) • POST Delay (in seconds) (None, 5, 10 15, or 20). Enabling this feature will add a user-specified delay to the POST process. This delay is sometimes needed for hard disks on some PCI cards that spin up very slowly; so slowly that they are not ready to boot by the time POST is finished. The POST delay also gives you more time to select **F10** to enter Computer (F10) Setup. • I/O APIC Mode (enable/disable). Enabling this feature will allow Microsoft Windows Operating Systems to run optimally. This feature must be disabled for certain non-Microsoft Operating Systems to work properly. • ACPI/USB Buffers @ Top of Memory (enable/disable). Enabling this feature places USB memory buffers at the top of memory. The advantage is that some amount of memory below 1 MB is freed up for use by option ROMs. The disadvantage is that a popular memory manager, HIMEM.SYS, does not work properly when USB buffers are at top of memory AND the system has 64 MB or less of RAM.

✎ Support for specific Computer Setup options may vary depending on the hardware configuration.

Computer Setup (F10) Utility *(Continued)*

Heading	Option	Description
Advanced* *(continued)* *For advanced users only.	PCI Devices	• Lists currently installed PCI devices and their IRQ settings. • Allows you to reconfigure IRQ settings for these devices or to disable them entirely. These settings have no effect under an APIC-based operating system.
	Device Options	Allows you to set: • Num Lock State at Power-On (off/on). • S5 Wake on LAN (enable/disable). • To disable Wake on LAN during the off state (S5), use the arrow (left and right) keys to select the Advanced > Device Options menu and set the S5 Wake on Lan feature to "Off." This obtains the lowest power consumption available on the computer during S5. It does not affect the ability of the computer to Wake on LAN from suspend or hibernation, but will prevent it from waking from S5 via the network. It does not affect operation of the network connection while the computer is on. • If a network connection is not required, completely disable the network controller (NIC) by using the arrow (left and right) keys to select the Security > Device Security menu. Set the Network Controller option to "Device Hidden." This prevents the network controller from being used by the operating system and reduces the power used by the computer in S5. • Processor Cache (enable/disable). • Spread Spectrum (enable/disable)

✎ Support for specific Computer Setup options may vary depending on the hardware configuration.

Computer Setup (F10) Utility *(Continued)*

Heading	Option	Description
Advanced* *(continued)* *For advanced users only.	Device Options *(continued)*	Allows you to set: *(continued)* • NIC PXE Option ROM Download (enable/disable). The BIOS contains an embedded NIC option ROM to allow the unit to boot through the network to a PXE server. This is typically used to download a corporate image to a hard drive. The NIC option ROM takes up memory space below 1MB commonly referred to as DOS Compatibility Hole (DCH) space. This space is limited. This F10 option will allow users to disable the downloading of this embedded NIC option ROM thus giving more DCH space for additional PCI cards which may need option ROM space. The default will be to have the NIC option-ROM-enabled. • USB 2.0 Capability (automatic, enable/disable)

✎ Support for specific Computer Setup options may vary depending on the hardware configuration.

Restoring the Configuration Settings

Restoring the configuration settings requires that you first perform the Save To Removable Media command within the Computer Setup (F10) Utility before Restore is needed.

✎ It is recommended that you save any modified computer configuration settings to removable media, and save the removable media for possible future use.

To restore the configuration, insert the removable media with the saved configuration into a USB drive (attached via the diagnostic adapter) and perform the Restore from Removable Media command with the Computer Setup (F10) Utility.

You must install an optional graphics diagnostic card on the Blade PC before you can use a monitor with the diagnostic adapter.

Restoring the configuration setting can also be performed from the operating system using System Software Manager (SSM). For more information, refer to the following website: www.hp.com/go/ssm

Flashing the Blade PC ROM

There are two methods for flashing your ROM:

- Upgrading the Blade PC ROM using Flashbin Utility
- Remote ROM flash

Upgrading the Blade PC ROM Using Flashbin Utility

Use Blade PC Flashbin utilities to upgrade your system BIOS.

The following steps also apply when recovering the system if the system enters Boot Block mode due to a ROM flash failure.

For information on creating a bootable Drive Key, refer to the following website:
http://wwss1pro.compaq.com/support/reference_library/viewdocument.asp?source=338111.xml&dt=21

To use the Flashbin Utility:

1. Download the latest version of the system BIOS and the Flashbin utility for the Blade PC onto a USB Drive Key. The latest system BIOS and Flashbin utility are available at: www.hp.com
2. Power down the blade. See the "Powering Down a Blade PC" section in Chapter 4.
3. Remove the Blade PC. See the "Removing a Blade PC" section in Chapter 4.
4. Install the optional graphics diagnostic card on the Blade PC.
5. Install the Blade PC in the enclosure.
6. Attach the diagnostic adapter to the Blade PC.

7. Attach the USB Drive Key with the downloaded system BIOS, a keyboard, a monitor, and a mouse to the diagnostic adapter.
8. To begin flashing the ROM:
   a. Power on the Blade.
   b. Change to the directory containing the BIOS and Flashbin utility.
   c. Type **Flashbin**.
   d. Press **Enter**.

Remote ROM Flash

Remote ROM Flash allows the system administrator to safely upgrade the ROM from a remote location. Enabling the system administrator to perform this task remotely results in a consistent deployment of and greater control over HP ROM images over the network. It also results in greater productivity and lower total cost of ownership.

For more information on remote ROM flash, refer to the following website: www.hp.com/go/ssm

HP PC Blade Enclosure Integrated Administrator

The HP PC Blade Enclosure Integrated Administrator is a centralized management and monitoring system for the HP PC Blade Enclosure and blade PCs. The Integrated Administrator acts as a combination terminal server and remote power controller, enabling out-of-band, secure, serial console connections to all Blade PCs in the enclosure, and offers all of the following:

- Full Command Line Interface (CLI) and Web interface
  - Blade PC privileges can be set on a user basis
  - Virtual power button to power Blade PC on or off
  - More than 100 scriptable commands to enable automated deployment and management

- Remote administration
  - Enables access to Blade PC's serial console
  - Enables full control over Blade PC's Power-On Self Test (POST) and boot process, including the Computer Setup (F10) Utility
- Hardware health monitoring

  The Integrated Administrator monitors and controls the enclosure fans, temperature sensors, power supplies, and blade status.
- Offline console buffering (when not connected) and event logging
  - Operating system console logging
  - Blade PC and enclosure hardware events
- Security features
  - Secure Shell access
  - User administration for up to 25 users
  - Event generation for invalid login attempts
  - Logging of user actions in event log
  - Selective enabling of all protocols, such as Telnet
  - Out-of-band management using Integrated Administrator's RS-232 console
  - Secure Sockets Layer (SSL) (Web interface)
  - Customer installable SSL certificates
- Increased availability
  - The Integrated Administrator is a self-contained embedded system with its own processor, memory, NIC, and flash ROM.
  - The enclosure itself is intelligent and fault-tolerant, and continues to function even if the Integrated Administrator fails.
  - The Integrated Administrator enables online firmware update with code signing to ensure only certified software releases are installed.

- HP Systems Insight Manager integration
  - HP Systems Insight Manager identifies the Integrated Administrator as a blade Management Processor.
  - The Integrated Administrator status is part of the Blade PC status. If the Integrated Administrator is degraded, all Blade PCs managed by that Integrated Administrator are shown as degraded.
  - HP Systems Insight Manager can capture the Integrated Administrator SNMP traps.
  - HP Systems Insight Manager enables the user to launch the Integrated Administrator Web interface.

The Integrated Administrator Web interface enables full access and control of the Blade PCs and enclosure via a browser, including:

- Enclosure management
  - Monitor fans, power supplies, and temperature
  - Graceful enclosure and Blade PC power shutdown
  - Enclosure unit identification (UID) control
  - Interface to management tools and utilities associated with the optional interconnect switch

    For details on the management tools and utilities associated with the optional interconnect switch, refer to the *HP PC Blade Enclosure C-GbE Interconnect Switch User Guide*.
- Blade PC management
  - Virtual power and unit identification (UID) buttons
  - Remote serial console
  - General health status
- User management
  - Add/remove/modify administrators/groups/users
  - Blade PCs assigned to groups
  - Two levels of user access to groups

For more information, including instructions on flashing the Integrated Administrator ROM, refer to the *HP PC Blade Enclosure Integrated Administrator User Guide* on the Documentation CD that ships with your enclosure.

Blade PC Event Messages

The event list displays the affected components and the associated error messages.

The following table identifies the event types (affected components) and associated event messages.

Blade PC Event Messages

Event Type	Event Message
Blade PC Environment	
Overheat condition*	System Overheating (Zone X)
Operating System	
Automatic operating system shutdown	Automatic Operating System Shutdown Initiated Due to Fan Failure Automatic Operating System Shutdown Initiated Due to Overheat Condition
Enclosure Environment	
Overheat Condition	The Integrated Administrator has issued an alert that its health state has changed **
Fan Failure	The Integrated Administrator has issued an alert that its health state has changed **

✎ *For specific operating temperature ranges, see Appendix F, "Specifications."

**Refer to the Integrated Administrator log for detailed messages.

HP Systems Insight Manager

IMPORTANT: You can install HP Systems Insight Manager using the Management CD included with your enclosure or download it from the HP website.

HP Systems Insight Manager provides in-depth fault, inventory, and configuration management of HP server platforms (including hundreds of Blade PCs) from a single console. You can use HP Systems Insight Manager to view each Blade PC and the Integrated Administrator of each blade enclosure. The system parameters that are monitored describe the status of all key Blade PC and enclosure components. By being able to view the events that occur to these components, you can take immediate action.

Use the instructions in the following section to view and print the event list from within HP Systems Insight Manager. You can also mark a critical or caution event as repaired after the affected component has been replaced.

Viewing the Event List

To view the event list for discovered systems:

1. In the HP Systems Insight Manager **System Lists** window,
   a. Expand the **System List**.
   b. Expand the **Systems by Type**.
   c. Select **All Systems**, **All Enclosures**, or **All Clients** to view the list of Blade PCs or enclosures.
2. On the displayed list, click on the appropriate enclosure or client.
3. Click on the **Events** tab on the newly displayed page.
4. Click on an event for the event details.

Printing the Event List

To print the List of Events, click on the **Print** button on the lower right corner of the event page.

To print the details of an individual event:

1. Click on the event.
2. Scroll down the page and click on **View Printable Details**.
3. When the new page opens, click on the browser **File/Print**.

HP PC Blade Enclosure C-GbE Interconnect Switch Management Tools and Utilities

The interconnect switch offers a wide variety of out-of-band and in-band configuration and management capabilities. The interconnect switch includes a default configuration for immediate operation.

Configuration and management is supported on any of the interconnect switch's four uplink ports as well as on the Integrated Administrator management Ethernet and serial console connectors. Supported interfaces include:

- HTTP-based via Web browser
  - Full-featured management interface
  - Supported on all common Web browsers
  - Includes graphical representations of the interconnect switch
  - Access via any Gigabit Ethernet uplink connector and the Integrated Administrator management connector
- Menu driven console with local and Telnet access
  - Full-featured management interface
  - Access locally via the Integrated Administrator console connector or remotely via Telnet
- SNMP agent support for interconnect switch management, configuration, and monitoring using generic SNMP manager with an MIB compiler
  - SNMP V1-V3 (RFC 1157) and RMON V1 (RFC 1757; groups 1 Statistics, 2 History, 3 Alarm, and 9 event) support

- ❏ Scripting capabilities are available via an SNMP scripting utility
- ❏ Access via any interconnect switch uplink connector and the Integrated Administrator management connector

The interconnect switch also offers additional configuration and management features including:

- Interconnect switch configuration and restore via TFTP server
  - ❏ Upload to and download from a TFTP server a copy of the interconnect switch configuration
  - ❏ Enables rapid deployment of multiple interconnect switches with similar configuration
  - ❏ Provides backup and restore capabilities
- Connector mirroring support for networking diagnostics

  Monitor network traffic on an interconnect switch connector by mirroring a copy of its data to a different (mirror) connector
- Link speed and activity LEDs on each Gigabit Ethernet uplink connector
- Two-level (level 1, level 15) username and password for all management interfaces
  - ❏ Ability to recover from lost management-level password
  - ❏ Configurable time-out period on Telnet and console sessions

A

Regulatory Compliance Notices

Regulatory Compliance Identification Numbers

For the purpose of regulatory compliance certifications and identification, your product has been assigned a unique series number. The series number can be found on the product nameplate label, along with all required approval markings and information. When requesting compliance information for this product, always refer to this series number. The series number should not be confused with the marketing name or model number of the product.

Federal Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (for example, personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

The rating label on the device shows the classification (A or B) of the equipment. Class B devices have an FCC logo or FCC ID on the label. Class A devices do not have an FCC logo or FCC ID on the label. After the Class of the device is determined, refer to the corresponding statement in the following sections.

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Class B Equipment

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit that is different from that to which the receiver is connected
- Consult the dealer or an experienced radio or television technician for help

Declaration of Conformity for Products Marked with the FCC Logo, United States Only

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding your product, contact us by mail or telephone:

- Hewlett-Packard Company
  P. O. Box 692000, Mail Stop 530113
  Houston, Texas 77269-2000
- 1-800-HP-INVENT (1-800-474-6836) (For continuous quality improvement, calls may be recorded or monitored.)

For questions regarding this FCC declaration, contact us by mail or telephone:

- Hewlett-Packard Company
  P. O. Box 692000, Mail Stop 510101
  Houston, Texas 77269-2000
- 281-514-3333

To identify this product, refer to the part, series, or model number found on the product.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Canadian Notice (Avis Canadien)

Class A Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Class B Equipment

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union Notice

This product complies with the following EU directives:

- Low Voltage Directive 73/23/EEC
- EMC Directive 89/336/EEC

Compliance with the directives implies conformity to applicable harmonized European standards (Europen Norms) which are listed on the EU Declaration of Conformity issued by Hewlett-Packard for this product or product family. This compliance is indicated by the following conformity markings placed on the product:

This marking is valid for non-Telecom products
and EU harmonized Telecom products (e.g. Bluetooth).

This marking is valid for EU non-harmonized Telecom products .
*Notified body number (used only if applicable - refer to the product label)

Japanese Notice

Korean Notice

Class A Equipment

A급 기기 (업무용 정보통신기기)

이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약 잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Class B Equipment

B급 기기 (가정용 정보통신기기)

이 기기는 가정용으로 전자파적합등록을 한 기기로서 주거지역에서는 물론 모든지역에서 사용할 수 있습니다.

Taiwanese Notice

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Laser Compliance

This product may be provided with an optical storage device (that is, CD or DVD drive) and/or fiber optic tranceiver. Each of these devices contains a laser that is classified as a Class 1 Laser Product in accordance with US FDA regulations and the IEC 60825-1. The product does not emit hazardous laser radiation.

Each laser product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated May 27, 2001 and with IEC 60825-1:1993/A2:2001.

WARNING: Use of controls or adjustments or performance of procedures other than those specified herein or in the laser product's installation guide may result in hazardous radiation exposure. To reduce the risk of exposure to hazardous radiation:

- Do not try to open the module enclosure. There are no user-serviceable components inside.
- Do not operate controls, make adjustments, or perform procedures to the laser device other than those specified herein.
- Allow only HP Authorized Service technicians to repair the unit.

Battery Replacement Notice

Your computer is equipped with a lithium manganese dioxide, a vanadium pentoxide, or an alkaline internal battery or battery pack. There is a danger of explosion and risk of personal injury if the battery is incorrectly replaced or mistreated. Replacement is to be done by an authorized service provider using the spare designated for this product. For more information about battery replacement or proper disposal, contact your authorized reseller or your authorized service provider.

WARNING: Your computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. There is risk of fire and burns if the battery pack is not properly handled. To reduce the risk of personal injury:

- Do not attempt to recharge the battery.
- Do not expose to temperatures higher than 60°C.
- Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.
- Replace only with the spare designated for this product.

Batteries, battery packs, and accumulators should not be disposed of together with the general household waste. To forward them to recycling or proper disposal, please use the public collection system or return them to HP, your authorized HP partners, or their agents.

B

Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

Preventing Electrostatic Damage

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ± 10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

C

POST Error Messages

Use POST error messages to assist in troubleshooting and performing basic diagnostic functions. The following table lists the numeric codes and text messages specific to Blade PCs.

Attempt the recommended actions in the order in which they are listed.

POST Error Messages

Code/Message	Health LED	Possible Cause	Recommended Action
101-Option ROM Checksum Error	Red	Blade system board has failed.	1. Clear CMOS. 2. Flash the system ROM. 3. Replace the blade.
102/103-System Board Failure	Red	Blade system board has failed.	1. Clear CMOS 2. Replace the blade.
162-System Options Not Set	Amber	CMOS was cleared or the blade's battery has failed.	1. Reset the system time and date in Computer Setup (F10). 2. Replace the blade's RTC battery.
163-Time & Date Not Set	Amber	CMOS was cleared	Reset the system time and date in Computer Setup (F10).

POST Error Messages *(Continued)*

Code/Message	Health LED	Possible Cause	Recommended Action
164-Memory Size Error	Amber	Memory configuration is incorrect.	1. Ensure the SODIMM(s) are properly installed. 2. Verify that the proper type of SODIMM is installed. 3. Reseat the SODIMM(s). 4. Replace the SODIMM(s). 5. Replace the blade.
201-Memory Error	Red	An SODIMM may not be seated correctly or is bad.	1. Ensure the SODIMM(s) are properly installed. 2. Verify that the proper type of SODIMM is installed. 3. Reseat the SODIMM(s). 4. Replace the SODIMM(s). 5. Replace the blade.
303-Keyboard Controller Error	Amber	Keyboard controller has failed.	1. Reconnect the keyboard with the blade turned off. 2. Use a different keyboard that is known to work properly. 3. Replace the blade.
304-Keyboard or System Unit Error	Amber	Keyboard has failed.	1. Reconnect the keyboard with the blade turned off. 2. Use a different keyboard that is known to work properly. 3. Replace the blade.
1720-SMART Hard Drive detects imminent failure	Amber	Hard drive is about to fail.	1. Run Drive Protection System if applicable. 2. Apply firmware patch (www.hp.com/support). 3. Back up contents and replace the hard drive.

POST Error Messages *(Continued)*

Code/Message	Health LED	Possible Cause	Recommended Action
1780-Disk 0 Failure	Amber	Hard drive has failed.	1. Run IDE Self-Test from Computer Setup (F10). 2. Replace the hard drive.
1782-Disk Controller Error	Red	Hard drive circuitry error has occurred.	1. Run IDE Self-Test from Computer Setup (F10). 2. Replace the hard drive. 3. Replace the blade.
1790-Disk 0 Error	Amber	Hard drive has failed.	1. Run IDE Self-Test from Computer Setup (F10). 2. Replace the hard drive. 3. Replace the blade.
1800-Temperature Alert	Amber	Internal temperature exceeds specification.	1. Ensure that the system fans are functioning properly and that the enclosure has adequate ventilation. 2. Check the processor heat sink. 3. Replace the blade.
1998-Master Boot Record Backup has been lost. Press any key to enter Setup to update the MBR Backup.	Amber	The previously saved copy of the MBR has been corrupted.	Run Computer Setup to update the MBR backup.
Invalid Electronic Serial Number	Amber	Electronic serial number has been lost.	1. Run Computer Setup. If data is loaded/will not allow changes, download SP5572.EXE (SNZERO.EXE) from www.hp.com. 2. Run Computer Setup, enter serial number under Security, System ID, then save changes.

D

Troubleshooting

This appendix provides specific troubleshooting information for the HP CCI solution. Use it to find details about the enclosure and Blade PC startup and operation errors.

For information on LEDs and switches specific to the Blade PCs and enclosure, see Appendix E, "LEDs and Switches."

WARNING: A risk of injury or damage to the equipment from hazardous energy is present. The access door provides access to hazardous energy circuits. The door should remain locked during normal operation or troubleshooting, or the system should be installed in a controlled access location where only qualified personnel have access to the system.

This appendix includes the following topics:

- When the enclosure does not start

  You are provided with initial instructions on what to try and where to go for help for the most common problems encountered during initial enclosure startup.

- Enclosure diagnostic steps

  If the enclosure does not start after you have performed initial troubleshooting procedures, use the tables in this section to identify possible reasons for the problem and possible solutions.

- When the Blade PC does not start

  You are provided with initial instructions on what to try and where to go for help for the most common problems encountered during initial POST. The Blade PC automatically performs this test each time you power up, before the Blade PC can load the operating system and start running software applications.

- Blade PC diagnostic steps

  If the Blade PC does not start after you have performed initial troubleshooting procedures, use the tables in this section to identify possible reasons for the problem and possible solutions.

- Problems after initial boot

  Once the Blade PC has passed the POST, you may still encounter errors, such as an inability to load your operating system. You are provided with instructions on what to try and where to go for help when you encounter errors after the Blade PC completes the POST.

- Remote troubleshooting

  Some troubleshooting can be performed remotely. You are provided with instructions for opening a remote console session, accessing the Blade PC Computer Setup (F10) Utility, reviewing Blade PC activity, and powering off a Blade PC.

When the Enclosure Does Not Start

This section provides systematic instructions on what to try and where to go for help for the most common problems encountered during initial startup of the HP PC Blade Enclosure. If you are having specific Blade PC trouble, see the "When the Blade PC Does Not Start" section in this appendix.

If the enclosure does not start:

1. Check the enclosure for the normal power up sequence:
   a. The front panel enclosure health LED and rear panel fan health, Integrated Administrator health, and power supply LEDs turn to solid green.
   b. The power supply fans and main fans start up.
2. Be sure that the enclosure is plugged into a working power outlet.
3. Be sure your power sources are working properly by checking the power LED on each power supply in the rear of the enclosure.

   For information about the location and function of all enclosure LEDs, see Appendix E, "LEDs and Switches."
4. Be sure your power supplies are working properly by checking the fault LED on your power supplies in the back of the enclosure (see Tables E-2 or E-3).
5. Be sure that the enclosure has power by checking the enclosure power LED on the rear of the enclosure (see table E-2 or E-3).
6. Be sure the fans are functioning by checking the fan health LED on the rear panel of the enclosure (see Table E-4).
7. Be sure the center wall assembly is delivering power to your enclosure by checking if the enclosure health LED on the front of the enclosure is illuminated (see Table E-1).
8. If the Integrated Administrator is rebooting repeatedly, be sure that it is not rebooting due to a problem that initiates an Enclosure Self Recovery (ESR) reboot.

   Refer to the following sections in the *HP PC Blade Enclosure Integrated Administrator User Guide* on the Documentation CD that ships with your enclosure:

   ❏ "Enclosure Self Recovery"

- ❏ "System Short Circuit" for other continuous rebooting problems

9. Restart the enclosure by pressing the enclosure power button on the fan cage on the rear of the enclosure.

CAUTION: Pressing the enclosure power button while the enclosure is running shuts down the enclosure and all Blade PCs.

IMPORTANT: If the enclosure does not restart, proceed to "Table D-1: Enclosure Diagnostic Steps" in this appendix.

10. Be sure that connectors and components are seated properly. Refer to the "General Loose Connections" section in the *Servers Troubleshooting Guide* on the Documentation CD that ships with your enclosure.

Enclosure Diagnostic Steps

If your enclosure does not function properly, use Table D-1 to determine appropriate actions based on the symptoms observed. Start with question 1 and work your way through the table in order to narrow down possible causes and identify actions or solutions.

According to the answers you give to the questions in Table D-1, you are directed to the appropriate table in the section that immediately follows. That table outlines possible reasons for the problem, options available to assist in diagnosis, and possible solutions.

Table D-1: Enclosure Diagnostic Steps

Question	Answer
Question 1: Is the power LED on both power supplies solid green?	If yes, continue to Question 2 of this table. If no, see Table D-2.
Question 2: Is the fault LED on both power supplies off?	If yes, continue to Question 3 of this table. If no, see Table D-3.
Question 3: Is the enclosure power LED on the rear panel green?	If yes, continue to Question 4 of this table. If no, see Table D-4.
Question 4: Is the enclosure health LED on the front of the enclosure on?	If yes, continue to Question 5 of this table. If no, see Table D-5.
Question 5: Is the local management console displaying information when connected to the enclosure?	If yes, use the displayed information for further diagnosis. If no, see table D-6, or continue to Question 6.
Question 6: Is the Integrated Administrator health LED green?	If yes, continue to Question 7 of this table. If no, see Table D-7.
Question 7: Is the fan health LED green?	If yes, and you are still unable to access the local console, contact HP or your authorized service provider for parts and service. If no, see Table D-8.

CAUTION: Pressing the enclosure power button while the enclosure is running shuts down the enclosure and all Blade PCs.

Table D-2: Is the Power LED on Both Power Supplies Solid Green?

Answer	Possible Reasons	Possible Solutions
No, they are both off.	The power supply is not connected to AC power or no AC power is available.	Be sure that all power cords are connected to the power supplies.
		Be sure that all power cords are plugged into working, grounded outlets.
No, one is green and one is off.	One power supply is not connected to AC power or no AC power is available.	Be sure that the power cord is connected to the power supply. You still have adequate power, but no redundancy; return to Table D-1.
		Be sure that the power cord is plugged into a working, grounded outlet. You still have adequate power, but no redundancy; return to Table D-1.
No, they are both blinking green.	Both power supplies are in standby mode.	Press the enclosure power button on the redundant fan cage in the rear of the enclosure. **Caution:** Pressing the enclosure power button while the enclosure is running shuts down the enclosure and all Blade PCs.
		Be sure that the pins on the power supplies are not damaged.
		Be sure that the power supplies are fully seated in the power supply bays.
No, one is solid green and one is blinking green.	One power supply is in standby mode.	Be sure that the pins on the power supplies are not damaged. You still have adequate power, but no redundancy; return to Table D-1.
		Be sure that the power supplies are fully seated in the power supply bays. You still have adequate power, but no redundancy; return to Table D-1.
Yes.	If both power LEDs are solid green, return to Table D-1.	

Table D-3: Is the Fault LED on Both Power Supplies Off?

Answer	Possible Reasons	Possible Solutions
No, one or both are amber.	The power supply is not connected to AC power or no AC power is available.	Be sure that all power cords are connected to the power supplies.
		Be sure that all power cords are plugged into working, grounded outlets.
	An over-voltage condition has occurred.	Check your power source to be sure that the correct voltage is being delivered.
		Be sure that the pins on the power supplies are not damaged.
		Be sure that the power supplies are fully seated in the power supply bays.
	An over-temperature condition has occurred.	Be sure that nothing is preventing the power supply fan blades from spinning.
	At least one power supply fan has failed.	Contact HP or your authorized service provider for parts and service.
No, one or both are blinking amber.	The power supply has shut off due to an over-current condition.	Inspect the power supply and center wall assembly connectors for any signs of damage.
		Look at all other health LEDs to determine which component may be causing the over-current condition.
		Contact HP or your authorized service provider for parts and service.

Table D-3: Is the Fault LED on Both Power Supplies Off? *(Continued)*

Answer	Possible Reasons	Possible Solutions
No, one is amber and one is off.	An over-voltage condition has occurred on one power supply.	Check your power source to be sure that the correct voltage is being delivered.
	An over-temperature condition has occurred on one power supply.	Be sure that the pins on the power supply are not damaged.
		Be sure that the power supply is fully seated in the power supply bays.
		Be sure that nothing is preventing the fan blades from spinning.
	At least one power supply fan has failed.	You no longer have adequate cooling. Contact HP or your authorized service provider for parts and service.
No, one is blinking amber and one is off.	One power supply has shut off due to an over-current situation.	Inspect the power supply and center wall assembly connectors for any signs of damage.
		Check other health LEDs to determine if another component may be causing the over-current condition.
		Contact HP or your authorized service provider for parts and service.
Yes.	If the fault LEDs on both power supplies are off, return to Table D-1.	

CAUTION: Pressing the enclosure power button while the enclosure is running shuts down the enclosure and all Blade PCs.

Table D-4: Is the Enclosure Power LED on the Rear Panel Green?

Answer	Possible Reasons	Possible Solutions
No, it is off.	The cable is not properly connected between the fan backplane and the power backplane.	Be sure that the connectors on the fan cable are properly seated and not damaged.
	The interconnect tray is not fully inserted.	Remove and reseat the interconnect tray.
	The Integrated Administrator module is not properly seated.	Contact HP or your authorized service provider for parts and service.
	The fan backplane assembly has failed.	
	The connector on the power backplane is damaged.	
	The power backplane has failed.	
No, it is amber.	The enclosure is in standby mode.	Push the enclosure power button on the fan cage at the rear of the enclosure. **Caution:** Pressing the enclosure power button while the enclosure is running shuts down the enclosure and all Blade PCs.
Yes, it is green.	If the enclosure power LED is green, return to Table D-1.	

Table D-5: Is the Enclosure Health LED on the Front of the Enclosure On?

Answer	Possible Reasons	Possible Solutions
No, it is off.	The enclosure status cable is disconnected from the center wall assembly or the enclosure status assembly.	Securely attach the enclosure status cable.
	The enclosure status assembly or the center wall assembly is not functioning properly.	Contact HP or your authorized service provider for parts and service.
Yes, it is amber.	A system component is degraded but your system is still functional.	Check your local or remote console for error messages. Go to Table D-6.
		Check system fans. Go to Table D-8.
		Contact HP or your authorized service provider for parts and service.
Yes, it is red.	A system component has a critical failure.	Check your local or remote console for error messages. Go to Table D-6.
		Check system fans. Go to Table D-8.
		Contact HP or your authorized service provider for parts and service.
Yes, it is green.	The Integrated Administrator has not detected any degraded or failed components.	Check your local or remote console for error messages. Go toTable D-6.
		Contact HP or your authorized service provider for parts and service.

Table D-6: Is the Local Management Console Displaying Information When Connected to the Enclosure?

Answer	Possible Reasons	Possible Solutions
No.	The local management console may not be connected properly.	Be sure that the local management console cable is securely connected.
	The Integrated Administrator module has failed.	Go to table D-7.
	The Integrated Administrator firmware may be damaged.	If these steps do not solve the problem, contact HP or your authorized service provider for assistance.
Yes.	Video is available for diagnosis. Determine the next action by observing POST progress and system event logs. Refer to the Appendix C, "POST Error Messages" for a complete description of each POST error message.	

Table D-7: Is the Integrated Administrator Health LED Green?

Answer	Possible Reasons	Possible Solutions
No, it is off.	The Integrated Administrator is booting.	If the enclosure is powered up, wait one minute while the Integrated Administrator is booting. If the Integrated Administrator health LED remains off, contact HP or your authorized service provider for parts and service.
No, it is amber.	Software has detected a condition within the Integrated Administrator that requires attention.	Press the reset button on the Integrated Administrator.
		Check the system fans. Go to Table D-8.
		Contact HP or your authorized service provider for parts and service.

Table D-7: Is the Integrated Administrator Health LED Green? *(Continued)*

Answer	Possible Reasons	Possible Solutions
No, it is red.	An over temperature condition was detected by the sensors on the Integrated Administrator module.	Be sure that the room meets temperature and airflow requirements described in the *HP ProLiant BL e-Class System Overview and Planning* white paper.
		Be sure that the system fans are functioning properly. Go to Table D-8.
Yes, it is green.	Either the Integrated Administrator console connector or the Integrated Administrator management connector is not properly connected.	If you have a serial device connected to the Integrated Administrator, be sure that it is connected with a null-modem cable and not a straight-through cable. See the null-modem cable pin out table in Chapter 4, "Installing and Cabling the HP CCI Solution."
		Be sure that the Integrated Administrator console connector or the Integrated Administrator management connector is securely seated.
		Refer to the *HP PC Blade Enclosure Integrated Administrator User Guide* for further troubleshooting information.

Table D-8: Is the Fan Health LED Green?

Answer	Possible Reasons	Possible Solutions
No, it is off.	The fan cable or connectors are not properly connected.	Be sure that the connectors on the fan cable are properly seated and not damaged.
	The Integrated Administrator module is not properly seated.	Contact HP or your authorized service provider for parts and service.
No, it is red.	At least two fans have failed or are not properly seated. You no longer have adequate cooling.	Open the fan cage and look for amber LEDs to determine which fans have failed. Replace all failed fans.
		Contact HP or your authorized service provider for parts and service.
No, it is amber.	At least one redundant fan has failed. Your system still has adequate cooling, but is no longer redundant.	Contact HP or your authorized service provider for parts and service.
Yes, it is green.	All fans are functional.	Check your local or remote console for error messages. Go to table D-6.
		If these steps have not identified the problem, contact HP or your authorized service provider for assistance.

When the Blade PC Does Not Start

This section provides systematic instructions on what to try and where to go for help for the most common problems encountered during initial Power On Self-Test (POST) of a Blade PC. The Blade PC must first complete this test each time you power up, before it can load the operating system and start running software applications.

If you have the same problem with several Blade PCs, you may have an enclosure problem. See "When the Enclosure Does Not Start" section in this appendix.

If the Blade PC does not start:

1. If the Blade PC is rebooting repeatedly, be sure that the Blade PC is not rebooting due to a problem that initiates an Automatic System Recovery-2 (ASR-2) reboot.

   You can enable ASR-2 to reboot your Blade PC.

2. Reseat the Blade PC.

IMPORTANT: If the Blade PC does not restart, proceed to "Table D-9: Blade PC Diagnostic Steps" in this appendix.

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3. Check the Blade PC for the normal power up sequence.

   Do this by checking that the Blade PC health LED turns to solid green. For location and function of the Blade PC health LED, see the "Blade PC and USB 1.1 Diagnostic Adapter LEDs" section in Appendix E, "LEDs and Switches."

4. Check the monitor (installed to the Blade PC via the diagnostic adapter) for the following messages that ensure that your Blade PC meets the minimal hardware requirements and is powered up during normal operations:

   - ❏ HP logo
   - ❏ Memory test
   - ❏ ROM information
   - ❏ Copyright information
   - ❏ Processor initialization
   - ❏ PXE initialization

- ❏ Operating system initialization

You must install the optional graphics diagnostic card on the Blade PC before using a monitor with the diagnostic adapter.

If the Blade PC completes POST and attempts to load the operating system, go to the "Problems After Initial Boot" section in this appendix.

Blade PC Diagnostic Steps

If your Blade PC does not start, or powers up but does not complete POST, answer the questions in Table D-9 to determine appropriate actions based on the symptoms observed.

According to the answers you give, you are directed to the appropriate table in the section that immediately follows. That table outlines possible reasons for the problem, options available to assist in diagnosis, and possible solutions.

Table D-9: Blade PC Diagnostic Steps

Question	Action
Question 1: Is the power LED on the Blade PC green?	If yes, continue to Question 2 of this table. If no, see Table D-10.
Question 2: Is the health LED on the Blade PC green?	If yes, continue to Question 3 of this table. If no, see Table D-11.
Question 3: Is the NIC A or NIC B LED on the Blade PC illuminated?	If yes, continue to Question 4 of this table. If no, see Table D-12.
Question 4: Is the monitor displaying information when connected to the Blade PC through the diagnostic adapter?	If yes, use the POST messages for further diagnosis, or continue to Table D-14. If no, see Table D-13.

Table D-10: Is the Power LED on the Blade PC Green?

Answer	Possible Reasons	Possible Solutions
No, it is off.	Blade PC is not seated properly.	Remove Blade PC and re-install.
	Either the Blade PC or the Blade PC bay is not functioning properly.	Determine whether the problem lies with the Blade PC or with the enclosure: • Remove the Blade PC from the enclosure, and insert it into a different bay. If the power LED on the Blade PC comes on and turns green, the problem lies with the original bay. • If the power LED on the Blade PC does not come on, try placing a different Blade PC in the original bay. If the power LED on the new Blade PC comes on, the old Blade PC may have failed. • Contact HP or your authorized service provider for replacement parts and service.
No, it is amber.	The Blade PC is in a ready state but is not powered on.	Push the power button on the Blade PC. If the Blade PC does not power on, check the Integrated Administrator for bay status and messages.
	The Blade PC has failed.	Replace the Blade PC. Contact HP or your authorized service provider for replacement parts and service.
Yes.	If the power LED on the Blade PC is green, go to Table D-11.	

Table D-11: Is the Health LED on the Blade PC Green?

Answer	Possible Reasons	Possible Solutions
No, it is off.	The Blade PC is off.	Press the power button on the Blade PC.
	The enclosure power supplies have failed or the blade's system board power circuitry has failed.	Check to see if the enclosure power supplies have failed. If the enclosure reports that the health is good, try the blade in another bay. If the failure follows the blade, replace the blade.
No, it is amber.	If the power LED is off or yellow, the blade experienced a Tcaution graceful shutdown due to a thermal trip point being crossed. ✎ Tcaution is one thermal safeguard point away from Tdeadly.	Ensure that the enclosure fans are functioning properly (see table D-8) and that the enclosure has adequate ventilation. If so, check the processor heat sink. Replace the system board if the condition still exists after corrective actions have been taken.
	If the power LED is green, the computer may have stopped at F1.	Check the POST error message or check the remote console log in the IA to see what POST messages were in the log last.
No, it is solid red.	The processor is not seated properly or is missing, or the VRM has failed (this condition will be reported by the enclosure as a VRM failure).	Be sure that the processor is properly seated. If the problem persists, replace the blade.
No, it blinks red two times, once per second, followed by a two second pause.	Processor thermal protection is activated.	Ensure that the enclosure fans are functioning properly (see table D-8) and that the enclosure has adequate ventilation. If so, check the processor heat sink. Replace the system board if the condition still exists after corrective actions have been taken.
No, it blinks red three times, once per second, followed by a two second pause.	CPU has failed.	Replace the blade.

Table D-11: Is the Health LED on the Blade PC Green? *(Continued)*

Answer	Possible Reasons	Possible Solutions
No, it blinks red four times, once per second, followed by a two second pause	The enclosure power connector for the blade has failed or the enclosure power supply has failed.	Move the blade to a different bay to see if the blade functions properly. If this corrects the problem, there is a problem with the enclosure backplane. Contact HP or your authorized service provider for replacement parts and service.
	System board (hot swap circuitry) has failed.	If the solution above did not resolve the problem, replace the blade.
No, it blinks red five times, once per second, followed by a two second pause.	SODIMM(s) may not be seated correctly, SODIMM(s) may be bad, or blade system board may be bad.	Check to see if memory is present. If so, then try re-seating the memory and rebooting. If the error still occurs then try replacing the memory. Replace the blade if the new memory produces the same failure result.
No, it blinks red six times, once per second, followed by a two second pause.	The optional graphics diagnostic card or blade system board has failed.	Replace the optional graphics diagnostic card. If the condition still exists, replace the blade.
No, it blinks red seven times, once per second, followed by a two second pause.	The blade system board has failed.	Replace the blade.
No, it blinks red eight times, once per second, followed by a two second pause.	A bad ROM upgrade (checksum error) has occurred and the blade is running out of recovery ROM.	Retry flashing the ROM. If the error still exists then the ROM flash image may be corrupt. Try downloading or using another ROM image.
Yes, it is green.	If the health LED on the Blade PC is green, go to Table D-12.	

Table D12: Is the NIC A or NIC B LED on the Blade PC Illuminated?

Answer	Possible Reasons	Possible Solutions
No.	The NIC is not connected to an active network connector.	Connect the NIC to an active network connector. Go to table D-13.
Yes, it is blinking green.	The connector is working normally, the link is active, and data is being transferred. Go to table D-13.	
Yes, it is green.	The connector is working normally, and the link is active. Go to table D-13.	

Table D-13: Is the Monitor Displaying Information When Connected to the Blade PC Through the Diagnostic Adapter?

Answer	Possible Reasons	Possible Solutions
No	The monitor may not have power.	Be sure that the monitor power cord is plugged in and that the monitor power button has been pressed.
	Video may not be connected properly.	Be sure the video connection to the diagnostic adapter is secure.
	The diagnostic adapter may not be securely attached to the Blade PC.	Tighten the thumbscrews to secure the diagnostic adapter to the Blade PC.
	The optional graphics diagnostic card may not be seated properly or is not installed.	Install or reseat the optional graphics diagnostic card.
	Nonvolatile RAM (CMOS) may be corrupted.	Clear CMOS. See Appendix E, "LEDs and Switches" for instructions on clearing CMOS.
	The system ROM may be corrupted.	Contact HP or your authorized service provider for assistance.
Yes	Video is available for diagnosis. Determine the next action by observing POST progress and error messages. Refer to the Appendix C, "POST Error Messages" for a complete description of each POST error message.	

Problems After Initial Boot

Once your Blade PC has passed POST, you may still encounter errors, such as an inability to load your operating system. Use Table D-14 to troubleshoot Blade PC installation problems that occur after the initial boot.

Table D-14: Problems After Initial Boot

Problem	Possible Cause	Possible Solution
You cannot install the operating system.	You cannot access the network.	Be sure that the NIC link LED on the front of the Blade PC is green or blinking green. If not, check the network connections on the rear of the system.
	You cannot access the PXE desktop.	Be sure that you are connected to the network through NIC A (PXE enabled by default), and that the link LED is green or blinking green.
You cannot boot an installed operating system.	The boot order is incorrect.	Go into Computer Setup and change the boot order.
	The hard drive has failed.	Look for error messages to determine if a hard drive has failed.
		Contact HP or your authorized service provider for replacement parts and service.
	The operating system image has corrupted.	Look for error messages to determine if the operating system image has corrupted. Re-install the operating system.

You can access information on service and support upgrades by visiting the following website:

www.hp.com/go/bizsupport

Remote Troubleshooting

This section explains the Integrated Administrator management functionalities of managing Blade PCs that can be helpful for troubleshooting:

- Opening a remote console session to a Blade PC
- Accessing Computer Setup (F10) Utility of a Blade PC
- Reviewing the activity of a Blade PC
- Powering off a Blade PC

Opening a Remote Console Session to a Blade PC

IMPORTANT: Enclosure administrators and group administrators with access to the bay can click the Remote Console button to open a remote text-based console to the Blade PC in the bay.

Web-Based Interface

To access the remote console using the Web-based user interface:

1. Click the **Bays** tab.
2. Click **Bay List** in the left panel.
3. Select the Blade PC from the blade list.
4. Click **Remote Console**.

   The **Remote Console** screen appears.
5. Click **Remote Console**.

   A new window opens that enables you to connect to the server blade terminal interface.

Command Line Interface

To access the remote console using the command line interface, type:

CONNECT BAY <bay number>

IMPORTANT: A Blade PC can only support one remote console session at a time.

Accessing the Computer Setup (F10) Utility for a Blade PC

IMPORTANT: Enclosure administrators and group administrators with access to the bay can select the Remote Console button to open a remote text-based console to the server blade in the bay.

Web-Based Interface

To access the Computer Setup (F10) Utility of a Blade PC using the Web-based user interface:

1. Click the **Bays** tab.
2. Click **Bay List** in the left panel.
3. Select the bay from the bay list.
4. Click **Remote Console**.

   The **Remote Console** screen appears.
5. Click **Remote Console**.

   A new window opens that enables you to connect to the server blade terminal interface.
6. If the Blade PC is running the operating system:
   a. Return to the Web-based user interface and click **Virtual Buttons** in the left panel.

CAUTION: Without the Blade PC health driver, the Integrated Administrator cannot reboot a Blade PC.

   b. If the Blade PC is off, select **Power On** at the bottom of the screen; otherwise, select **Reboot** at the bottom of the screen.
   c. Click **Apply** and return to the remote console session.
7. When prompted to press **F10** for the Computer Setup (F10) Utility:
   a. Press **Esc**.
   b. Press **0** (zero).

8. To exit Computer Setup from the file menu:
   a. Select one of the following:
      - **Apply Defaults and Exit**
      - **Ignore Changes and Exit**
      - **Save Changes and Exit**
   b. When prompted to press **F10**, press **Esc** and **0** (zero) to confirm.
9. To close the remote console session:
   a. Press **Ctrl_** (control underscore).
   b. Press **D**.

Command Line Interface

To access the Computer Setup (F10) Utility of a Blade PC using the command line interface:

1. If the Blade PC is running the operating system, reboot the Blade PC by typing the following commands sequentially:

   REBOOT BAY <bay number>

   Yes
2. Connect to the Blade PC by observing its bay number and typing:

   CONNECT BAY <bay number>
3. When prompted to press **F10** for the Computer Setup (F10) Utility:
   a. Press **Esc**.
   b. Press **0** (zero).
4. To exit the Computer Setup (F10) Utility:
   a. Press **Esc**.
   b. When prompted to press **F10**, press **Esc** and **0** (zero) to confirm.

5. To close the remote console session:
   a. Press **Ctrl_** (control underscore).
   b. Press **D**.

Reviewing Activity of a Blade PC

IMPORTANT: This task can only be performed for a given Blade PC bay by enclosure administrators, group administrators, and group members with access rights to the Blade PC bay.

Web-Based Interface

To access the console log for a Blade PC using the Web-based user interface:

1. Click the **Bays** tab.
2. Click **Bay List** in the left panel.
3. Select the bay from the bay list.
4. Click **Console Log** under **Bay Information**.

Command Line Interface

To view the system log for a Blade PC using the command line interface, type:

SHOW SYSLOG BAY <bay number>

IMPORTANT: Pressing the letter q quits the command. Pressing any other key shows the next screen, if more information is available to display. The system log of the Blade PC is not stored between reboots, so the information only includes what has taken place since the last power-on of the Integrated Administrator.

Powering Off the Blade PC

CAUTION: Rebooting or powering off the Blade PC removes all power from the server blade and ends all open sessions.

Web-Based Interface

To reboot or power off the Blade PC using the Web-based user interface:

1. Click the **Bays** tab.
2. Click **Bay List** in the left panel.
3. Click the Blade PC you wish to reboot or power off.
4. Click **Virtual Buttons** at the bottom of the screen.
5. Click **Reboot**, **Power Off**, or **Power Off Immediately**.
6. Click **Apply**.

   When the Blade PC power is off, the **Power Off** button becomes the **Power On** button.

Command Line Interface

To reboot the blade PC using the command line interface, type:

REBOOT BAY <bay number> { [, | -] <bay number>} {FORCE} { [PXE | HDD] }

To power off the Blade PC (immediately or otherwise) using the command line interface, type:

POWEROFF BAY <bay umber> { [, | -] <bay number>} {FORCE}

IMPORTANT: If the FORCE argument is invoked, the Blade PC powers down immediately and could lose data or become unstable.

E

LEDs and Switches

LEDs

The HP CCI solution features LEDs in the following areas:

- Enclosure front panel LEDs
- Enclosure rear panel LEDs with interconnect switch
- Enclosure rear panel LEDs with optional RJ-45 patch panel
- Fan health LEDs
- Blade PC and diagnostic adapter LEDs

Enclosure Front Panel LEDs

Use the following figure and table to determine the location and function of the enclosure status LEDs on the front panel of the HP PC Blade Enclosure.

Enclosure front panel LEDs

Table E-1. Enclosure Front Panel LEDs

Item	LED	Status	Description
❶	Enclosure unit ID (UID)	Off =	Off
		Blue =	Identification of unit
❷	Enclosure health	Off =	Enclosure off and health good
		Green =	Enclosure on and health good
		Amber =	Enclosure degraded: Redundant component has failed
		Red =	Enclosure critical: Immediate attention required, enclosure at risk of down time

Enclosure Rear Panel LEDs

Use the following figures and tables to determine the location and function of the enclosure status LEDs on the rear panel of the HP PC Blade Enclosure. Enclosure rear panel LEDs provide the following information:

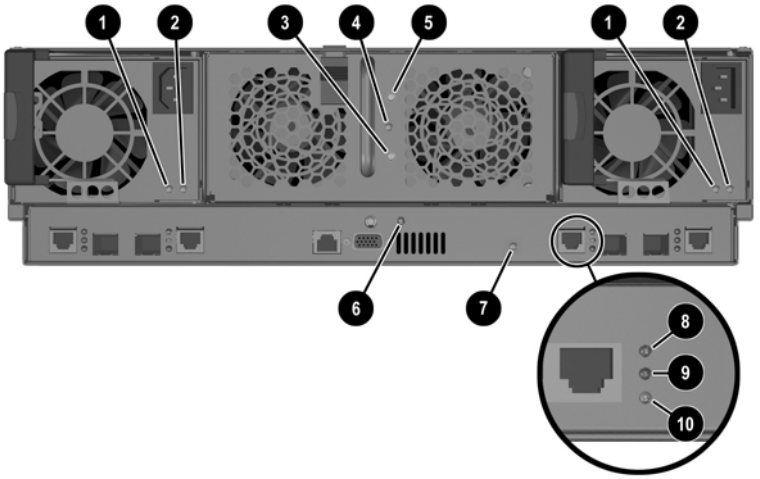
- Enclosure status
- Power supply status
- Integrated Administrator status

Enclosure Rear Panel LEDs with Interconnect Switch

HP PC Blade Enclosure C-GbE Interconnect Switch LEDs provide the following information:

- Interconnect switch health
- Connector speed
- Link/activity

Use the following figure and table to determine the location and function of the LEDs on the rear panel when the interconnect switch is installed.



Rear panel LEDS with interconnect switch

Table E-2. Rear Panel LEDs with Interconnect Switch

Item	LED	Status	Description
❶	Power supply power	Off =	No power to the system
		Blinking green =	Standby, AC present
		Green =	System power turned on
❷	Power supply fault	Off =	Power supply OK
		Amber =	No AC power or over-voltage or over-temperature
		Blinking amber =	Current limit
❸	Enclosure power	Off =	No power to enclosure
		Amber =	Enclosure shutdown; power available; hibernate
		Green =	Enclosure power on

Table E-2. Rear Panel LEDs with Interconnect Switch

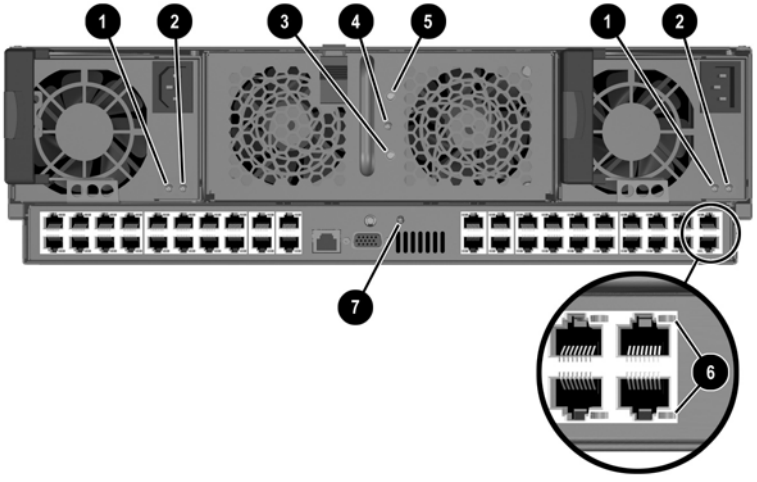
Item	LED	Status	Description
❹	Fan health	Off =	Enclosure off, fan health good
		Green =	Enclosure on, fan health good
		Amber =	Fan subsystem degraded
		Red =	Fan subsystem critical
❺	Enclosure UID	Off =	Off
		Blue =	Identification of unit
❻	Integrated Administrator health	Off =	Enclosure off, Integrated Administrator health good
		Green =	Enclosure on, Integrated Administrator health good
		Amber =	Integrated Administrator critical
❼	Interconnect switch health	Green =	Interconnect switch health good
		Yellow =	Interconnect switch health degraded
		Red =	Interconnect switch health critical
		Off =	Switch booting/No power
❽	Stacking	Green =	Base unit
		Yellow =	Slave unit
		Off =	No stacking
❾	Link/activity	Green =	Network link
		Flashing green =	Network activity
		Yellow =	Port disabled
		Off =	No network link

Table E-2. Rear Panel LEDs with Interconnect Switch

Item	LED	Status	Description
⑩	Connector speed	Green =	1000
		Yellow =	100
		Off =	10

Enclosure Rear Panel LEDs with optional RJ-45 Patch Panel

RJ-45 patch panel LEDs provide status information for each NIC of every Blade PC installed in the enclosure. Use the following figure and table to determine the location and function of the LED on the rear panel when the RJ-45 patch panel is installed.



Rear panel LEDs with RJ-45 patch panel

Table E-3. Rear Panel LEDs with RJ-45 Patch Panel

Item	LED	Status	Description
❶	Power supply power	Off =	No power to the system
		Blinking green =	Standby, AC present
		Green =	System power turned on
❷	Power supply fault	Off =	Power supply OK
		Amber =	No AC power or over-voltage or over-temperature
		Blinking amber =	Current limit
❸	Enclosure power	Off =	No power to enclosure
		Amber =	Enclosure shutdown; power available; hibernate
		Green =	Enclosure power on
❹	Fan health	Off =	Enclosure off, fan health good
		Green =	Enclosure on, fan health good
		Amber =	Fan subsystem degraded
		Red =	Fan subsystem critical
❺	Enclosure UID	Off =	Off
		Blue =	Identification of unit
❻	RJ-45 link activity	On =	Network link
		Off =	No network link
		Flashing =	Network activity

Table E-3. Rear Panel LEDs with RJ-45 Patch Panel

Item	LED	Status	Description
❼	Integrated Administrator health	Off =	Enclosure off, Integrated Administrator health good
		Green =	Enclosure on, Integrated Administrator health good
		Amber =	Integrated Administrator critical

Fan Health LEDs

Use the following figure and table to determine the location and function of the fan health LEDs.

Hot-plug fan health LEDs

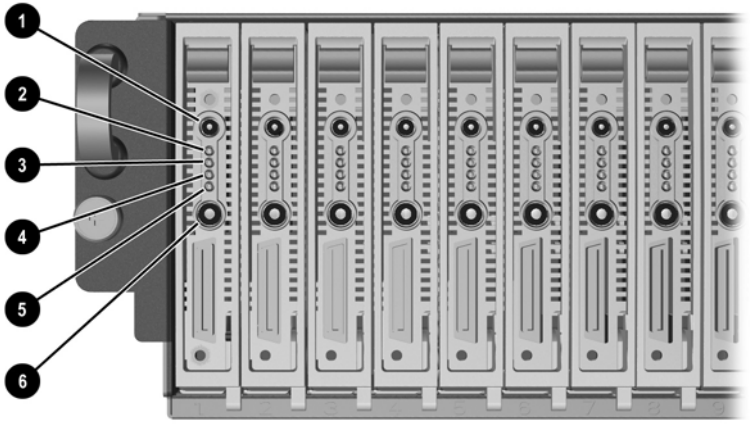
Table E-4. Hot-Plug Fan Health LEDs

Item	LED	Status
❶	Fan 1	Green = Normal Amber = Failed
❷	Fan 2	
❸	Fan 3	
❹	Fan 4	

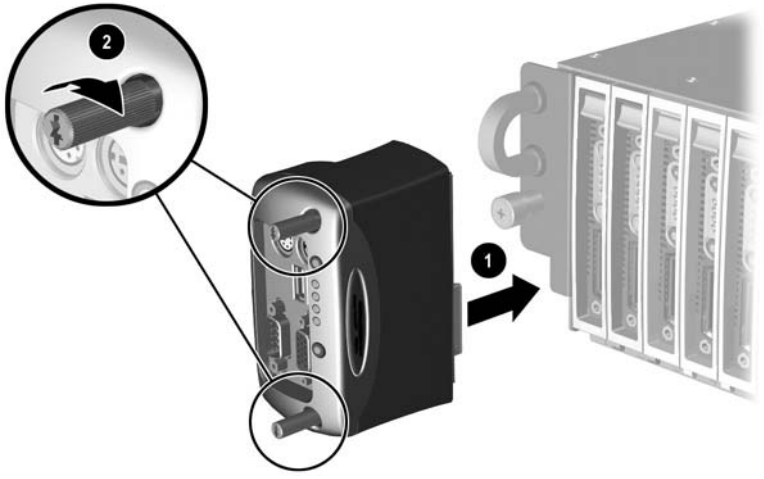
Blade PC and USB 1.1 Diagnostic Adapter LEDs

The Blade PC and USB 1.1 diagnostic adapter LEDs have the same orientation and function. Use the following figures and table to determine the location and function of the LEDs.

The USB 2.0 diagnostic adapter has no LEDs.



Blade PC LEDs



USB 1.1 Diagnostic adapter LEDs

Table E-5. Blade PC and USB 1.1 Diagnostic Adapter LEDs

Item	LED	Status	Description
❶	Unit Identification	Off =	Off
		Blue =	Identification of Blade PC
		Blue (blinking) =	Being accessed remotely
❷	Health	Off =	Blade PC off
		Green =	Blade PC on and health good
		Amber =	Blade PC degraded, or power-up prohibited by the Integrated Administrator
		Red =	Blade PC critical
		Red (blinking) =	Blade PC critical (see table D-11 in Appendix D, "Troubleshooting")
❸	NIC A	Off =	No connection
		Green =	Linked to network
		Blinking green =	Linked and activity on the network
❹	NIC B	Off =	No connection
		Green =	Linked to network
		Blinking green =	Linked and activity on the network
❺	Drive activity	Off =	No drive activity
		Blinking green =	Drive activity
❻	Power	Off =	No AC power to enclosure or Blade PC
		Amber =	Enclosure on and health good
		Green =	Blade PC power turned on

Switches

The HP CCI solution features switches in the following areas:

- Front panel
- Rear panel

Front Panel

Use the following figure and table to determine the location and function of the switches on the front panel of the enclosure and Blade PC.

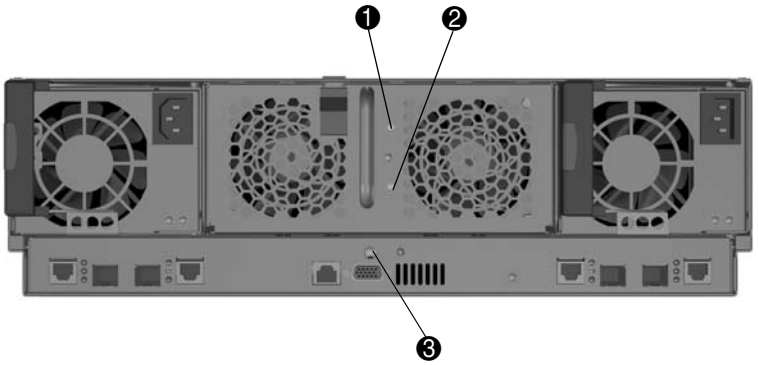
Enclosure front panel and Blade PC buttons

Table E-6. Enclosure Front Panel Buttons

Item	Description	Function
❶	Blade PC UID button	Activates the UID LED for easy Blade PC identification
❷	Enclosure UID button	Activates the UID LED for easy enclosure identification
❸	Blade PC power button	Powers up or down a Blade PC; hold down for four seconds to perform an emergency shutdown

Rear Panel

Use the following figure and table to determine the location and function of the buttons on the rear panel of the enclosure.



Enclosure rear panel buttons

Table E-7. Enclosure Rear Panel Buttons

Item	Description	On/Off Function
1	Enclosure UID button	Activates the UID LED for easy enclosure identification
2	Enclosure power button	Powers the enclosure and all Blade PCs up or down
3	Integrated Administrator reset button	Restarts the Integrated Administrator

The enclosure power and UID buttons are recessed. A non-metallic tool, such as a pencil, may be needed to press these buttons.

CMOS

Press the CMOS button (labeled SW50) on the Blade PC's system board for 2 seconds to clear CMOS.

F

Specifications

This appendix provides operating and performance specifications for the following HP CCI solution components:

- Blade enclosure
- Blade PC
- Hot-plug power supply

Blade Enclosure

Enclosure Operating and Performance Specifications		
Dimensions		
Height	13.34 cm	5.25 in
Depth	68.58 cm	27 in
Width	48.26 cm	19 in
Weight with interconnect tray		
No Blade PCs	26.76 kg	59 lb
20 Blade PCs	46.7 kg	103 lb
Input requirements		
Rated input voltage	100 to 127 VAC	200 to 240 VAC
Rated input frequency	47 to 63 Hz	
Rated input current	8.5A at 120 VAC	4.3A at 240 VAC
Rated input power	1000 W	
BTUs per hour	3416	
Temperature range		
Operating (See note)	10° to 35°C	50° to 95°F
Non-operating (See note)	-30° to 60°C	-22° to 140°F
Relative humidity (noncondensing)		
Operating (See note)	10% to 90%	
Non-operating (See note)	5% to 95%	
✎ Operating temperature has an altitude derating of 1°C per 1,000 ft. No direct sunlight. Storage maximum humidity of 95% is based on a maximum temperature of 45°C. Minimum pressure for storage is 70 KPa.		

Blade PC

Blade PC Operating and Performance Specifications		
Dimensions		
Height	11.94 cm	4.7 in
Depth	39.37 cm	15.5 in
Width	2.03 cm	0.8 in
Weight (maximum)	1.0 kg	2.2 lb
Temperature range		
Operating (See note)	10° to 35°C	50° to 95°F
Non-operating (See note):	-30° to 60°C	-22° to 140°F
Relative humidity (noncondensing)		
Operating (See note)	10% to 90%	
Non-operating (See note):	5% to 95%	
✎ Operating temperature has an altitude derating of 1°C per 1,000 ft. No direct sunlight. Storage maximum humidity of 95% is based on a maximum temperature of 45°C. Minimum pressure for storage is 70 KPa.		

Hot-Plug Power Supply

Hot-Plug Power Supply Operating and Performance Specifications

Dimensions		
Height	9.14 cm	3.579 in
Depth	28.45 cm	10.24 in
Width	11.43 cm	4.47 in
Weight	2.95 kg	6.5 lbs
Input voltage specifications		
Rated input voltage	100 to 127 VAC	200 to 240 VAC
Frequency range	47 to 63 Hz	
Rated input power	1000 W	
Rated input current	8.5 A at 120 VAC	4.3 A at 240 VAC
Maximum peak power	1167 W	
Output voltage specifications		
Rated output voltage		5.05 V, 3.33 V, 12.1 V and 5 Vaux
Rated output power		600 W
Rated output current		5.01 V - 0.5 A ~ 34 A 3.33 V - 0.5 A ~ 36 A 12.1 V - 0.5 A ~ 38 A 5 Vaux - 0.2 A ~ 8 A
Maximum peak power		700 W
Ambient temperature range		
Operating	10° to 35°C	50° to 95°F
Non-operating	-30° to 60°C	-22° to 140°F

Hot-Plug Power Supply Operating and Performance Specifications *(Continued)*

Relative humidity (noncondensing)		
Operating	10% to 90%	10% to 90%
Non-operating	5% to 95%	5% to 95%
Dielectric voltage withstand		
Input to output		2000 VAC Min.
Input to ground		1500 VAC Min.

✎ Operating temperature has an altitude derating of 1°C per 1,000 ft. No direct sunlight. Storage maximum humidity of 95% is based on a maximum temperature of 45°C. Altitude minimum for storage is 70 KPa.

G

Blade PC Battery

Each Blade PC has one memory device that requires a battery for retaining stored information.

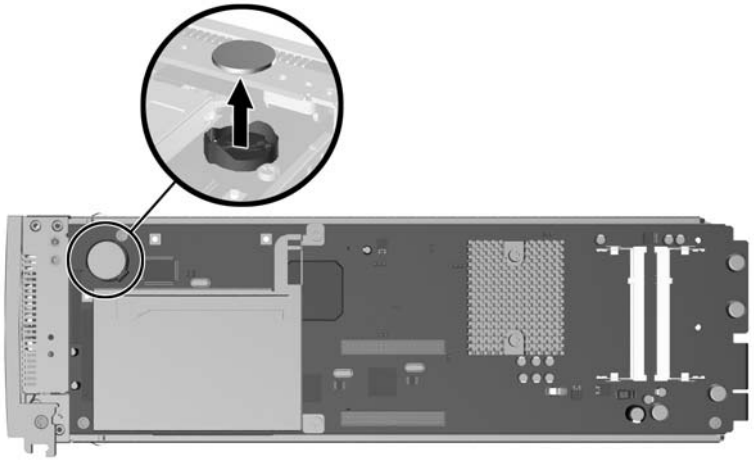
Blade PC Battery Replacement

When your Blade PC no longer automatically displays the correct date and time, you may need to replace the battery that provides power to the real-time clock. Under normal use, battery life is usually about 5 to 10 years. Use an HP 200-mAh, lithium, 3-V replacement battery (spare P/N 166899-001).

To install a new battery:

1. Power down the Blade PC. See the "Powering Down a Blade PC" section in Chapter 4, "Installing and Cabling the HP CCI Solution."
2. Remove the Blade PC from the enclosure. See the "Removing a Blade PC" section in Chapter 4, "Installing and Cabling the HP CCI Solution."

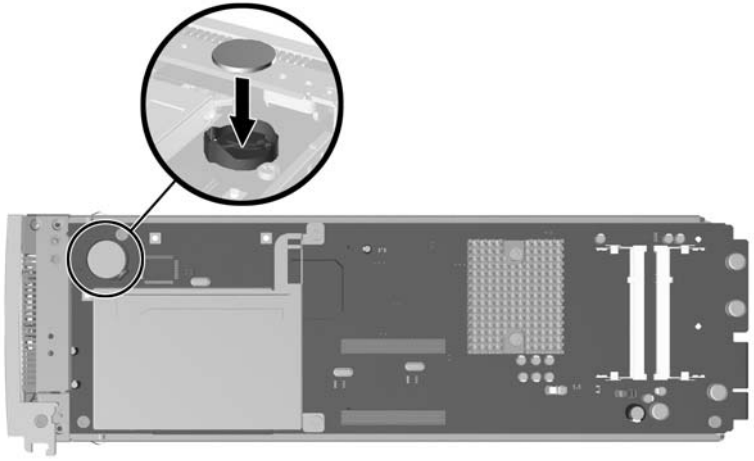
3. Locate the battery holder on the Blade PC.
4. Remove the existing battery.



Locating and removing the battery on the Blade PC

WARNING: For proper battery disposal, see the "Battery Replacement Notice" section in Appendix A, "Regulatory Compliance Notices."

5. Install the new battery.



Installing the new battery

6. Install the Blade PC in the enclosure. See the "Installing a Blade PC" section in Chapter 4, "Installing and Cabling the HP CCI Solution."
7. Power up the Blade PC. See the "Powering Up the HP CCI Solution" section in Chapter 4, "Installing and Cabling the HP CCI Solution."
8. Run the Computer Setup (F10) Utility to reconfigure the Blade PC with the new battery. See the "Computer Setup (F10) Utility" section in Chapter 5, "Deployment and Management."

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